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DEPRESSED DOMESTIC MINING AND MINERAL INDUSTRIES

PROPOSED REPORT

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

HOUSE OF REPRESENTATIVES

TO ACCOMPANY

H. Con. Res. 177

DECLARING THE SENSE OF CONGRESS ON THE DEPRESSED DOMESTIC MINING AND MINERAL INDUSTRIES AFFECTING PUBLIC AND OTHER LANDS

JULY —, 1959.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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[COMMITTEE PRINT NO. 8]

PROPOSED REPORT TO ACCOMPANY H. CON. RES. 177

86TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
1st Session } { No ——

DECLARING THE SENSE OF CONGRESS ON THE DEPRESSED DOMESTIC MINING AND MINERAL INDUSTRIES AFFECTING PUBLIC AND OTHER LANDS

——————Ordered to be printed

Mr. POWELL, from the Committee on Interior and Insular Affairs, submitted the following

REPORT

[To accompany H. Con. Res. 177]

The Committee on Interior and Insular Affairs to whom was referred the concurrent resolution (H. Con. Res. 177) declaring the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands, having considered the same, report favorably thereon without amendment and recommend that the concurrent resolution do pass.

LEGISLATION CONSIDERED

The purpose of House Concurrent Resolution 177, introduced by Chairman Wayne N. Aspinall of the Committee on Interior and Insular Affairs, is to declare the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands. Eight identical concurrent resolutions were introduced as follows: House Concurrent Resolution 178, by Representative Baring of Nevada; House Concurrent Resolution 179, by Representative Edmondson of Oklahoma; House Concurrent Resolution 180, by Representative Pfost of Idaho; House Concurrent Resolution 181, by Representative Powell of New York; House Concurrent Resolution

182, by Representative Rogers of Texas; House Concurrent Resolution 183, by Representative Saylor of Pennsylvania; House Concurrent Resolution 184, by Representative Ullman of Oregon; and House Concurrent Resolution 189, by Representative Chenoweth of Colorado.

Testimony bearing on House Concurrent Resolution 177 and its companions was obtained by the Subcommittee on Mines and Mining of the Committee on Interior and Insular Affairs in hearings held in Washington, D.C., June 25–July 2, 1959. This report is based upon the record of those hearings, the departmental reports on House Concurrent Resolution 177, and additional information assembled by the staff of the committee, including a staff report on the status of the domestic mining industries compiled by Paul M. Tyler, special committee consultant on mines and mining.

The need for the adoption of House Concurrent Resolution 177 is indicated later in this report under "Committee conclusions."

Introduction

In the innumerable attempts that have been made to state and implement a national minerals policy, agreement seems to have been reached that a healthy and strong mining and minerals industry is requisite to American security in peace or war. Ours is more and more a mineral-based economy. Most thinking persons realize that certain branches of the domestic mining industry need help. Even though we require imports of mine products in order to meet the ever-growing requirements of an expanding economy, it is vitally necessary to maintain a vigorous mobilization base which can be expanded quickly whenever emergencies arise.

On the other hand, broad areas of disagreement exist as to how far we should go in the present situation in efforts to nourish the mining industries and to keep alive segments which may be heavily handicapped in competition with foreign supply. Moreover, it is necessary to keep in mind possible conflicts between policies aimed at aiding domestic minerals and other national policies and aspirations.

How far should we go in bolstering our domestic industry in the face of protests from friendly nations that want to sell their mineral products in the big U.S. market? Can we raise the price level of mineral raw materials to domestic manufacturers without unduly handicapping them in disposing of their products? Should we build a fence around our mineral reserves in order to conserve them for posterity, in order not to exhaust our reserves ahead of those of other nations? Can American dollars and manpower be used more efficiently in producing other goods and services rather than in extracting minerals from some of our relatively low-grade deposits?

The foregoing are only a few of the many questions that have to be considered. Some of them are difficult to answer. It is recognized that the overriding principle of diminishing returns must temper our judgment in each area of conflicting interest. It does not follow, however, that we should continue to rely solely upon stopgap palliatives to meet each new crisis when it arises.

The problems involved in carrying out a national mineral policy are only too apparent. Tariffs, quotas, subsidies, incentive price-

purchase programs, depletion allowances, accelerated amortization and other tax concessions, technical assistance, and other devices have all been tried, but no set of ground rules has yet been established to afford needed guidance as to when and how suitable remedies should be applied.

The immediate purpose of the committee hearings was to assay the status of the domestic mining industries. We have to know which segments are presently strong and which are weak or dying. We must also study the impact of closing mines, shrinking payrolls, and reduced tax revenues on local communities. In industries and in mining districts which are depressed we want to ferret out the causes which led to this condition.

The limited objective of the recent hearings, therefore, was to bring out the basic facts regarding the ability of the American mining industry to supply the metals, industrial minerals and solid fuels needed to meet the demands of an expanding economy in peace or war. Only when these facts are known and not until we know more about their causes and effects, can we wisely undertake the recommendation of suitable remedies and the shaping of domestic policies that will serve as guide lines for a long-range program.

I. Size and Importance of the Mineral Industries of the United States

Tables 1 and 2 show the value of U.S. mineral production distributed by mineral groups and by States, respectively, in specified years. Table 3 gives trends in physical volume and table 4 shows the amounts of national income generated by the mining industries.

As shown in table 1, the value of domestic mineral production rose to an alltime record of $18,126 million in 1957. Excluding oil and gas valued at $9,984 million from this grand total, the value of the domestic mine products considered in the present investigation was $8,142 million.

Compared with the gross national product, $440,328 million in the same year, the foregoing figures are not particularly impressive. In respect to number of workers directly employed, the mining industries are even less significant. As shown in table 5, the grand total for these industries averaged only 809,000 persons in 1957 of whom 326,200 were in the oil and gas industries, leaving a total of only 482,800 workers actually employed in the extraction of metals, industrial minerals, and solid fuels. These figures compare with a total labor force of over 70 million.

Mining is a sizable industry. In terms of national income generated it ranks ahead of any of the various groups of manufacturing industries except food, chemicals, and metal products. The mining group is also ahead of communications, trucking, banking, and most service industries. However, as the figures in the preceding paragraphs show, it is not a dominant source of national income or employment. There is some significance to the fact that most mine products, other than fuels, are durable increments to our national wealth. Once produced, they do not go up in smoke or disappear down the throats of people and animals. However, it does not follow that they are superior to other raw materials merely because they last a long time.

TABLE 1.—*Value of U.S. mineral production, by mineral groups*

[In millions of dollars]

Year	All minerals	Metals	Nonmetals	Coal	Oil and gas
1939	3,808	631	754	916	1,507
1945	6,231	774	888	2,092	2,477
1950	11,862	1,351	1,822	2,893	5,796
1951	13,529	1,671	2,079	3,032	6,747
1952	13,396	1,617	2,163	2,669	6,947
1953	14,418	1,811	2,350	2,547	7,710
1954	14,067	1,518	2,630	2,017	7,902
1955	15,807	2,055	2,972	2,298	8,482
1956	17,383	2,358	3,284	2,649	9,092
1957	18,126	2,129	3,277	2,736	9,984
1958	16,350	1,580	3,250	2,200	9,320

Source: Minerals Yearbook.

TABLE 2.—*Value of U.S. mineral production, by States*

[In millions of dollars]

State	1950	1955	1957	1958 [1]
Alabama	150.0	186.5	209.4	162.9
Alaska	17.9	25.4	28.8	22.3
Arizona	207.4	378.3	372.6	318.1
Arkansas	119.6	132.8	140.9	131.5
California	1,056.4	1,456.5	1,650.9	1,451.0
Colorado	154.9	286.2	340.6	300.8
Connecticut	5.7	10.4	16.1	12.2
Delaware	.5	1.7	1.0	1.3
District of Columbia				
Florida	70.7	109.0	136.0	138.7
Georgia	43.4	60.4	69.8	72.5
Hawaii	1.8	3.6	5.9	5.9
Idaho	79.3	68.5	73.5	62.8
Illinois	488.1	533.1	579.6	571.0
Indiana	166.6	183.5	198.9	196.4
Iowa	41.8	63.6	69.0	79.5
Kansas	368.6	470.8	505.1	502.2
Kentucky	460.0	391.1	450.4	429.0
Louisiana	693.6	1,156.6	1,524.9	1,459.0
Maine	7.5	13.0	12.7	12.8
Maryland	22.7	35.5	39.6	43.2
Massachusetts	16.1	22.1	24.8	22.1
Michigan	230.2	363.8	404.4	341.1
Minnesota	331.6	501.2	584.5	376.0
Mississippi	102.9	122.6	149.3	144.6
Missouri	113.2	151.6	152.9	141.5
Montana	103.6	167.0	191.7	177.3
Nebraska	14.0	54.2	83.3	89.5
Nevada	48.5	113.2	86.0	66.9
New Hampshire	1.7	2.6	3.3	2.8
New Jersey	46.8	57.5	64.9	47.8
New Mexico	210.3	436.5	553.0	557.1
New York	156.6	216.9	244.3	202.1
North Carolina	26.3	41.2	37.6	35.3
North Dakota	9.6	44.1	57.8	57.6
Ohio	274.6	340.5	385.9	323.3
Oklahoma	527.1	711.1	803.9	767.7
Oregon	21.5	31.7	42.5	42.1
Pennsylvania	1,186.2	969.9	1,082.1	887.2
Rhode Island	1.4	1.8	1.4	1.5
South Carolina	11.4	20.2	22.2	21.6
South Dakota	32.7	40.5	40.0	42.6
Tennessee	90.4	119.3	128.7	127.8
Texas	2,674.5	3,993.3	4,497.3	4,034.6
Utah	230.0	331.9	356.2	339.0
Vermont	18.6	23.9	21.9	21.0
Virginia	137.8	172.5	224.5	201.1
Washington	49.1	67.3	58.7	59.0
West Virginia	829.6	755.5	982.7	748.6
Wisconsin	41.7	65.8	68.6	61.8
Wyoming	177.7	297.8	345.6	376.5
Total	11,881.6	15,804.0	18,126.0	16,290.0

[1] Preliminary figures.

Source: Minerals Yearbook.

The great national importance of minerals arises from the fact that they provide the sinews of war and literally the foundation and framework of our industrial structure. Notwithstanding greater efficiency in their use and improved conservation practices our mineral requirements expand faster than our economy as a whole. Minerals are the source of job opportunities in other industries. Only by guaranteeing the continuing supply of mine products can we hope for full employment of the Nation's workers or for providing the weapons and equipment needed for national defense. It has been estimated that minerals alone, by reason of the work performed in getting them out of the ground and in transporting and processing them for ultimate consumption, furnish about two-thirds of our national wealth. For example, the iron content of iron ore for which the miner gets only a few cents may be worth dollars a pound by the time it is converted into vital automotive equipment, airplane parts, electronic devices, or business machines.

In many of our Western States and to a varying degree in other States nonferrous metal mining is locally the predominant industry. In northern Minnesota and Michigan prosperity depends largely on iron mining activity. In an important area in Pennsylvania the plight of anthracite miners is the cause of serious dislocations, and in various Appalachian bituminous coal mining districts mine payrolls measure the economic well-being of the population.

TABLE 3.—*Indexes of physical volume of U.S. mineral production*

[1947–49=100]

Year	All minerals	Metals	Nonmetals	Coal	Oil and gas	Total industrial production
1939	70.8	90.2	61.1	74.8	65.7	58
1945	92.0	95.2	70.2	103.7	97.3	107
1950	102.6	108.8	116.1	91.7	105.1	112
1951	112.6	117.2	127.3	93.6	110.9	120
1952	110.9	112.7	132.1	82.7	122.8	124
1953	112.6	119.1	135.2	78.8	126.6	134
1954	107.9	97.6	146.4	68.1	125.4	125
1955	119.0	115.0	161.0	78.7	134.6	139
1956	125.8	117.2	172.4	85.0	141.7	143
1957	128.0	116.0	175.3	83.0	150.0	143
1958	117.0	91.0	175.0	68.0	140.0	134

Source: Minerals Yearbook and Federal Reserve Bulletin.

TABLE 4.—*National income by industrial origins*

[In millions of dollars]

	1950	1952	1954	1956	1957	1958
All industries	241,876	292,155	298,335	349,356	363,951	360.8
Mining	5,010	5,237	5,021	6,265	6,191	----
Metal	691	720	653	1,095	847	----
Anthracite	282	254	159	168	171	----
Bituminous coal	1,706	1,554	1,143	1,555	1,609	----
Nonmetals	527	614	677	844	781	----
Oil and gas	1,804	2,095	2,164	2,603	2,783	----
Manufacturing	74,371	90,172	91,057	109,901	112,517	----

Source: Survey of Current Business.

II. Current Versus Historical Trends

General

Historically, the prices of minerals and other basic raw materials have risen rapidly as business activity expanded. Today, although the general economic outlook is favorable and consumption is rising to record levels, the prices of most of the products of the mining industry remain relatively low. Even when surplus stocks are used up, the facts of excess productive capacity tend to prevent prices from rising above the point at which any but the lowest cost mines can operate economically. Many of our domestic metal mining industries have not benefited at all from the vigorous upturn in the economy.

As noted by S. H. Williston, the United States, although relatively self-sufficient as recently as 20 years ago, now imports fully half of its mineral requirements. Effective tariffs have been reduced from ad valorem rates of 60 to 80 percent in the Tariff Act of 1930 to less than 10 percent. Hourly wage rates have jumped from 65 cents to $2.50 or more and now that American capital, machinery, and know-how are widely disseminated throughout the world, our competitive position vis-a-vis miners in low-wage foreign countries has deteriorated. The management and technical efficiency of mining enterprises often matches American standards even in "backward" countries.

Foreign mineral production has expanded greatly. Part of this expansion was generated by American stockpile buying and when this slowed down or was cut back the surplus over current free world requirements continued to seek a market in the United States. Consumption in Europe and other parts of the free world is expanding but has not yet caught up with the large increase in mineral production capacity.

Whereas the impact of depressed conditions in the mineral industry is most apparent on small mines, which in some segments of the industry have already gone out of business, big companies may suffer actually heavier losses even though they continue to operate. In the mining industry, uneconomic operations not only deplete the financial resources of the operators but tend also to destroy valuable mineral assets in the ground. Needed exploration, development, and even upkeep work has to be stopped and as mining is concentrated in the richer parts of the ore body—"high grading" or "picking the eyes out of the mine"—adjoining areas of lower grade ore are likely to be rendered unminable.

The appended tables show that U.S. minerals production as a whole has registered consistent growth. The value and physical volume of production attained an alltime record total in 1957. Compared with the 1947–49 average, the physical volume (see table 3) of all minerals produced was 28 percent higher but this gain was strongly influenced by the 50 percent increase in crude oil and gas production and to a less extent by the 75 percent increase in industrial minerals (nonmetals other than fuels). The increase in metal mine production was only 16 percent and the coal mine output was nearly 17 percent less than it was during the 1947–49 base period. Meanwhile, during this same decade, the increase in total U.S. industrial production was about 43 percent.

In broader perspective, the rate of growth of our overall mineral production, as shown by contrasting the 1957 statistics with comparable figures for earlier years, outpaced that of agricultural production

and far outstripped the large increase in population but failed to match the spectacular rise in industrial production. Since about 1940, especially, the domestic mine production of metals and solid fuels has lagged behind factory production. In 1958, as compared to 1947, metals lost ground due to lower prices and some reductions in volume. Nonmetals as a group held steady in volume and value. Solid fuels were off 20 percent in value; while fuel prices remained level, output was down. Even in 1957 the value of nonfuel minerals was less than it was in the preceding year.

It is appropriate at this point to emphasize the fact that conditions in different branches of the mining industry differ widely. Some continue to ride the crest of the economic wave while others seemed destined to stay in the trough. On the other hand, there are certain apparent trends and economic influences which affect all branches to a greater or lesser degree. Some of these trends and influences are discussed below.

Employment

Table 5 shows the general decline in mining employment and the changes in various branches of mining for specified years. From 1939 to March 1959, the overall drop was 18.8 percent. Employment decreases of 82 percent in anthracite mines, 54 percent in bituminous coal mines and almost 10 percent in metal mines were only partly offset by the 35 percent increase at oil and gas wells and a 37 percent gain in nonmetallic mining.

TABLE 5.—*Employment in U.S. mining industries, 1939 and 1952–59*

[Thousands]

Year	All mining	Metal mining	Iron ore mining	Copper mining	Lead-zinc mining	Anthracite	Bituminous coal	Nonmetals	Oil and gas
1939	845	103				89	388	76	189
1952	885	99.8	33.5	26.5	21.2	63.4	327.8	103.8	289.8
1953	852	106.0	40.1	28.6	17.8	54.0	288.9	105.9	297.4
1954	777	99.3	35.2	27.9	16.4	41.1	226.7	105.1	298.8
1955	770	101.0	34.2	28.9	16.6	31.3	218.7	108.3	317.1
1956	807	108.3	35.1	33.3	17.4	29.3	228.6	115.2	324.8
1957	809	111.2	38.9	32.6	16.7	28.4	230.0	113.3	326.2
1958 (average)	721								
March	733	95.9	31.3	28.9	14.1	22.8	206.3	105.0	302.6
June	717	92.9	30.4	28.2	13.3	19.2	190.1	111.8	303.2
September	711	90.7	31.8	28.4	11.4	18.5	187.2	113.0	301.5
December	713	93.4	30.3	30.2	12.7	19.6	192.2	107.3	300.7
1959: March	686	92.9	32.3	29.0	12.4	16.4	179.8	104.2	292.8

Source: Monthly Labor Review.

Herman Clott, representing the International Union of Mine, Mill, and Smelter Workers, informed the subcommittee that productivity increases cost the jobs of about 3,500 workers in copper mining since 1957 and that more than half the drop in lead-zinc mining employment was caused by increased productivity.

No industry has made more progress in improving labor efficiency than the bituminous coal industry. In World War I, according to a recent statement by John L. Lewis, the daily productivity per man employed was about 3 tons, in World War II it was nearly 6 tons, and today it is between 11 and 12 tons. In Great Britain, the production is approximately 1¼ tons per man per day.

Wages

Since wages and salaries represent from 40 to 60 percent or more of the cost of producing most mine products, increases in wage rates are of immediate importance to the mineowner even though in the long run they may be offset by increased efficiency or by inflation-produced higher prices for the products.

Table 6 shows changes in hourly earnings in each of the major branches of the industry. In 1958, average gross earnings of mineworkers per hour were 3½ to 4 times the prewar 1939 rates. So-called fringe benefits or changes in employers' liability insurance rates, and other expenses piled on top of these increases in nominal wages have further enhanced the cost to the employer of an hour's work, in mining perhaps more than in most industries.

TABLE 6.—*Average hourly wages (gross earnings) in U.S. mining and manufacturing industries*

Year	Metal	Anthracite	Bituminous	Oil and gas	Nonmetals	Manufacturing
1939	$0.708	$0.923	$0.886	$0.873	$0.550	$0.633
1945	1.042	1.252	1.240	1.197	.886	1.023
1950	1.554	1.970	2.010	1.815	1.361	1.465
1952	1.86	2.26	2.29	2.09	1.58	1.67
1954	2.07	2.52	2.48	2.27	1.76	1.81
1955	2.19	2.53	2.56	2.32	1.82	1.88
1956	2.30	2.40	2.81	2.48	1.92	1.98
1957	2.42	2.63	3.02	2.61	2.00	2.07
1958—March	2.44	2.65	3.04	2.70	2.02	2.11
June	2.43	2.62	3.02	2.71	2.07	2.12
September	2.54	2.60	3.01	2.69	2.10	2.14
December	2.55	2.64	3.04	2.68	2.13	2.19
1959—March	2.57	2.77	3.19	2.81	2.13	2.22

Witnesses for many industries cited low wages in foreign countries as the reason they are unable to compete with imported metals or minerals. Now that advanced American management, technical knowledge, and machinery are almost universally available cheap labor has become a more significant competitive factor than ever before. Various witnesses reported that miners' wages in many districts of Mexico and in much of South America have remained static at around $1 to $1.30 per day. In India and southeast Asia they are even lower and they are not much higher in Spain and Italy. In Turkey, the rate may be $0.50 per day and in many African mines native workers get only $0.50 to $0.75 per day.

Consumption

Although the apparent consumption of many metals and minerals in the United States in 1957 and 1958, and of a few commodities in 1956, fell short of previous record quantities, the mineral requirements of the United States are definitely increasing. Consumption in other free world countries is increasing even faster. Intercommodity competition is an ever-present hazard in the marketing of mine products as well as of manufactured goods. The near-collapse of the anthracite industry and the recurring problems of bituminous coal miners result from competition from liquid and gaseous fuels.

TABLE 7.—*Reported consumption of principal metals and minerals in the United States*

[Thousands of short tons, unless otherwise stated]

Commodity	1950	1954	1955	1956	1957	1958
Antimony, primary [1] ..... short tons	35,181	12,180	12,470	14,962	12,380	11,880
Barite, crude	754	1,216	1,460	2,035	1,671	1,300
Bauxite, dried equivalent ..... 1,000 long tons	.....	6,428	6,984	7,751	7,633	7,200
Chromite, gross weight	980	914	1,584	1,847	1,760	1,221
Cobalt ..... 1,000 pounds	11,913	7,350	9,740	9,562	9,157	7,475
Copper, refined	2,002	1,255	1,502	1,521	1,352	1,133
Fluorspar, finished	434	480	570	621	645	494
Iron ore, gross weight ..... 1,000 long tons	105,489	94,200	125,000	125,170	130,602	105,100
Lead	1,407	1,095	1,213	1,210	1,138	982
Magnesium, primary ..... short tons	20,399	39,220	46,460	53,610	44,442	35,352
Manganese ore, gross weight	1,205	1,741	2,104	2,264	2,361	1,497
Mercury ..... 76-pound flasks	45,503	42,800	57,190	54,143	52,889	52,617
Mica splittings ..... 1,000 pounds	.....	6,733	8,998	8,662	8,037	.....
Molybdenum [2] ..... do	37,081	23,720	35,940	39,082	34,662	29,918
Nickel (excluding scrap) ..... short tons	93,235	94,700	109,300	127,578	122,466	78,600
Platinum metals ..... 1,000 troy ounces	503	582	851	859	744	690
Tin ..... long tons	112,478	82,890	90,480	90,324	82,507	72,000
Tungsten concentrate, W content ..... short tons	9,916	4,483	4,483	4,531	4,272	2,660
Zinc, slab	1,144	1,120	1,120	1,009	936	868
Anthracite	39,915	26,900	23,600	24,000	20,800	19,000
Bituminous coal and lignite	460,428	363,060	423,412	432,858	413,700	364,899

[1] Includes antimony content of antimonial lead from foreign and domestic ores after 1955.
[2] Molybdenum content of primary products (shipments to domestic destinations).

Source: Minerals Yearbook data. Preliminary estimates for 1958.

The displacement of white lead by titanium pigments and the growing use of aluminum for some uses formerly dominated by copper or other metals are familiar additional examples of interindustry competition. However, total energy requirements continue to rise rapidly, and our appetite for metals and other mineral raw materials continues to grow.

It has been estimated that by 1980 the United States will be consuming 50 percent more raw materials annually than it does today and that mineral consumption may double. Our present requirements are six times what they were in 1900 and our energy production is considerably more than fivefold what it was at the turn of the century. Minerals were mined before the dawn of history yet the world has produced and used more minerals since the outbreak of World War I than during all the centuries that went before. The next two decades will probably see the population of the United States grow to around 225 million and our gross national product to $600 billion a year. All of these figures indicate a continued expansion of demand for minerals.

The reserve situation

While it is true that most of our bonanza deposits are gone and that domestic mining companies are generally working lower grade deposits than many of their foreign competitors, the American position as regards reserves of most major mineral products is still good. Intensive working of the deposits in recent years, instead of exhausting our national resources, has encouraged active prospecting and exploration with the result that our known reserves have generally increased. In the cases of several of the strategic metals the increase

of known domestic resources has been spectacular, and throughout the list of mineral commodities new discoveries have tended at least to keep pace with mining output.

Prices versus costs

The U.S. Bureau of Labor Statistics indexes (see table 8), indicate that average prices of iron ore and of nonferrous metals as a group have increased faster and currently are considerably higher than the average wholesale price of all commodities. Even coal prices are somewhat higher than this general yardstick.

Prices of explosives and construction machinery and equipment, which are important items in mining cost, have outpaced those of mine products—and wages, as indicated previously, have gone up much faster. However, the total index of mine expenses which allegedly gages the impact of labor cost and productivity, but does not include capital cost and contract work, has not paced the increases in prices of nonferrous metals.

This overall picture calls for further study and, of course, some mine products, notably lead and zinc, have fared much worse than others.

TABLE 8.—*Price relatives for selected mine products and for selected mining cost items*

[U.S. Bureau of Labor Statistics index numbers, 1947–49=100]

	1950	1952	1954	1955	1956	1957	1958
Average, all commodities		111.6	110.3	110.7	114.3	117.6	
Coal	106.2	108.7	106.3	104.8	114.5	124.4	
Iron ore			157.7	160.5	173.0	181.7	
Nonferrous metals			124.2	142.7	156.1	137.4	
Fertilizer materials			113.0	111.6	108.4	106.8	
COSTS							
Coal	106.2	108.7	106.3	104.8	114.4	124.4	
Gas	98.2	103.7	108.8	111.6	114.3	116.1	
Petroleum products	103.7	109.3	110.8	112.8	118.2	127.0	
Lumber			117.3	112.4	127.2	119.7	
Explosives			121.8	125.0	130.5	136.7	
Construction machinery, etc			131.6	137.1	148.6	160.0	
Mining expenses [1]	96.2	113.1	127.6	119.7	128.2	132.9	

[1] This calculated composite excludes capital cost of contract work but allegedly gages impact of labor cost and productivity.

Imports

Before and for some time after World War I the United States was the leading exporter of copper, zinc, petroleum, and various other mineral commodities which now we import. In many cases this change from an export to an import basis merely means that consumption has expanded faster than domestic production. In other cases, however, the expansion of imports of minerals products has injured the domestic industries.

Table 9 shows some of the changes which have recently occurred in the ratio of imports to total new supplies of various commodities.

TABLE 9.—*Imports of principal minerals as a percent of net supply in the United States*[1]

[Percent]

Commodity	1953	1954	1955	1956	1957	1958
Ferrous ores, scrap and metals:						
Iron (equivalent)[2]	8	14	14	20	21	18
Manganese (content)[2]	89	86	80	82	87	86
Chromite (Cr_2O_3 content)[2]	97	91	93	88	94	90
Cobalt (content)[3]	84	85	87	79	79	78
Molybdenum (content)[2]						
Nickel (content)[2]	95	95	92	90	87	93
Tungsten ore and concentrate (W content)[2]	75	65	57	62	77	73
Other metallic ores, scrap, and metals:						
Copper (content)[2]	33	37	30	30	31	30
Lead (content)[2, 4]	41	37	36	37	41	44
Zinc (recoverable content)[2, 4]	52	51	51	53	54	54
Aluminum (equivalent)[2, 5]	75	74	75	[6] 79	[6] 85	83
Tin (content)[3]	85	84	81	82	80	79
Antimony (recoverable content)[2]	36	[7] 30	[7] 37	36	40	20
Cadmium (content)[2, 8]	65	67	76	84	66	60
Magnesium (content)[3]	2	1	3		1	
Mercury[2, 8]	85	72	41	66	57	51
Platinum group metals[3]	87	90	95	93	91	86
Nonmetallic minerals:						
Asbestos[2]	93	93	94	94	94	94
Barite, crude[2]	26	26	25	31	42	35
Boron minerals and compounds[2]						
Bromine and bromine compounds[2]						
Clays[2]						
Fluorspar, finished[2]	53	54	57	60	65	52
Gypsum, crude[2]	28	28	28	30	32	30
Mica (except scrap)[2]	94	97	99	96	100	93
Phosphate rock (P_2O_5 content)[2]	1	1	1	1	1	1
Potash (K_2O equivalent)	7	6	8	9	9	9
Salt, common[2]	1	1	1	1	3	2
Sulfur (all forms, content)[2]	1		4	6	11	10
Talc and allied minerals[2]	4	4	4	3	3	3

[1] Net supply is the sum of primary shipments, secondary production, and imports, minus exports.
[2] General imports as a percent of net supply.
[3] Imports for consumption as a percent of net supply.
[4] The general imports of lead and zinc include very substantial Government acquisitions by barter.
[5] Includes 85 percent of bauxite mine production (other than shipments) and imports and 91 percent of alumina imports, both converted to aluminum equivalent.
[6] Includes ingot equivalent (90 percent) of imports of scrap, which are largely scrap pig. Some duplication occurs because of small quantity of loose scrap imported. (See also footnote 1).
[7] Includes recovery in antimonial lead from foreign silver and lead ores.
[8] Primary shipments estimated as 40 percent of total primary production of metals, imports by the sum of the remaining 60 percent of such production plus imports of metal. Primary compounds not made from metal, data for which in certain years cannot be disclosed, are included. Secondary includes recovery from both old and new scrap.
[9] Secondary production omitted in years before 1954.

Source: Minerals Yearbook data.

Self-sufficiency

Table 10 brings out the fact that U.S. self-sufficiency in many important metals and minerals has drastically declined. Table 11, showing U.S. production as a percentage of world output of specified minerals, is also of interest in this connection. In a few cases where domestic mine production represents a larger percentage of domestic consumption in 1957 versus 1950 it may be noted that consumption declined as in the case of copper or that domestic production was being stimulated by Government purchase programs as in the case of mercury and chromite.

Hon. Thomas J. Dodd, speaking in the Senate on May 22, 1959, called attention to the fact that only one-third of the 100 minerals in common industrial use in the United States is entirely supplied by domestic producers, one-third is provided almost entirely by foreign

suppliers, and the remaining third is obtained partly domestically and partly from abroad. Our deficiencies are most marked in the metals group. A chart prepared by the Bureau of Mines in January 1953 showed that the United States was self-sufficient in its supplies of only three metals, namely magnesium (from seawater), tellurium (a copper refinery byproduct), and molybdenum. At present, we can add uranium and vanadium (currently a byproduct of uranium) to the other three.

TABLE 10.—*U.S. self-sufficiency in metals and mineral production*

Commodity	Year	Production	Imports [1]	Consumption	Self-sufficiency (percent)
FERROUS METALS					
Iron ore, 1,000 long tons	1950	97,151	8,281	105,489	92
	1957	106,148	33,653	130,602	81
	1958	68,000	27,539	105,104	66
Chromite, 1,000 short tons	1950	(2)	1,304	1,453	0
	1957	166	2,064	1,760	9
	1958	144	600	1,221	12
Cobalt, 1,000 pounds (in ore)	1950	660	9,498	11,913	6
	1957	4,123	18,062	9,157	45
	1958	4,838	17,300	7,475	65
Manganese ore, 1,000 short tons	1950	431	1,835	1,650	26
	1957	367	2,222	2,361	15
	1958	317	1,799	1,497	21
Nickel, short tons	1950	913	89,200	93,235	10
	1957	12,900	140,000	122,466	10
	1958	13,490	108,000	78,600	17
NONFERROUS METALS					
Aluminum ore (bauxite), 1,000 long tons	1950	1,335	2,516	3,325	40
	1957	1,416	7,101	7,633	19
	1958	1,311	7,915	9,226	15
Antimony, primary, short tons	1950	6,888	16,333	35,181	20
	1957	709	15,265	12,389	6
	1958	705	9,878	11,880	7
Beryllium, do	1950	559	4,800	3,007	19
	1957	521	7,200	4,309	12
	1958	520	5,000	6,200	8
Copper, 1,000 short tons	1950	909	[3] 608	1,447	63
	1957	1,086	[3] 594	1,352	80
	1958	980	[3] 520	1,133	91
Mercury, 76-pound flasks	1950	4,535	56,080	45,503	10
	1957	34,625	42,005	52,889	61
	1958	36,950	20,934	52,617	71
Platinum, 1,000 troy ounces	1950	38	428	503	8
	1957	19	687	745	3
	1958	15	674	690	3
Lead, 1,000 short tons	1950	451	[3] 532	1,407	32
	1957	325	[3] 531	1,138	30
	1958	266	[3] 559	982	28
Zinc, do	1950	623	[3] 393	1,144	55
	1957	539	[3] 795	1,232	44
	1958	403	[3] 728	1,111	36
NONMETALS					
Asbestos, short tons	1950	42,434	705,000	727,000	6
	1957	42,967	682,732	723,492	6
	1958	40,400	605,000	642,600	6
Barite, 1,000 short tons	1950	695	58	786	88
	1957	1,153	833	1,671	69
	1958				
Fluorspar, do	1950	302	165	434	70
	1957	329	631	645	35
	1958	339	415	494	48

[1] Imports for consumption unless otherwise indicated.
[2] U.S. production of chromite in 1950 was 404 short tons.
[3] General imports, that is, imports for immediate consumption plus material entering the country under bond.

Source: Minerals Yearbook data.

TABLE 11.—*Comparison of world and U.S. production of specified metals and minerals, 1950 and 1957*

[Quantities in thousand short tons]

Commodity	1950			1957		
	World	United States	U.S. percent of world	World	United States	U.S. percent of world
Fuels:						
Anthracite	155,080	44,077	29	157,700	25,338	16
Bituminous coal and lignite	1,842,000	515,829	28	2,409,405	490,000	20
Natural gas....1,000,000 cubic meters	203,000	177,860	88	(2)	(2)	
Petroleum, crude.....1,000 barrels	3,802,907	1,973,574	52	6,440,350	2,616,778	41
Nonmetallic minerals (other):						
Asbestos	1,400	42	3	2,050	44	2
Cement	145,000	43,300	30	1,443,993	313,756	22
Diamonds.....1,000 carats	15,250			20,800		
Fluorspar	870	302	35	1,775	329	19
Graphite [1]	149	6	4	320	(3)	(3)
Gypsum	25,100	8,193	33	33,900	9,195	27
Mica	115	70	61	175	93	53
Nitrogen, agricultural [1] (fiscal year)	4,090	1,160	28	[1] [3] 7,826	2,230	28
Phosphate rock	24,200	11,500	48	32,350	13,976	43
Potash (K_2O equivalent)	4,850	1,276	26	8,700	2,266	26
Pyrites	12,800	1,040	8	19,000	1,190	6
Salt	53,000	16,616	31	77,400	23,854	31
Sulfur, native.....1,000 long tons	5,700	5,192	91	7,300	5,579	76
Metals, mine basis:						
Antimony [1] (Sb content)	48	2	5	53	(4)	1
Bauxites	8,000	1,335	17	18,700	1,416	8
Chromite	2,500	(5)	(6)	4,500	166	4
Copper (Cu content)	2,770	909	33	3,870	1,086	28
Gold.....1,000 troy ounces Au	32,500	2,289	7	39,680	1,800	5
Iron ore	243,000	97,151	40	422,135	106,148	25
Lead	1,815	431	24	2,540	338	13
Manganese ore	5,300	134	2	13,000	366	3
Mercury.....1,000 flasks Hg	143	5	3	235	33	14
Nickel (Ni content)	160	1	(6)	314	10	3
Platinum group 1,000 troy ounces Pt, Pd, etc.	600	38	6	1,190	19	2
Silver.....1,000 troy ounces Ag	198,600	42,406	21	228,700	38,720	17
Tin.....1,000 long tons Sn	169	(7)	(6)	186	2	1
Tungsten (60 percent WO_3)	43	5	12	73	6	8
Zinc (Zn content)	2,340	623	27	3,420	532	16
Metal, smelter basis:						
Aluminum	1,650	720	44	3,730	1,648	44
Copper	2,960	911	31	4,040	1,178	29
Iron, pig (including ferroalloys)	148,000	66,400	45	232,900	81,144	35
Lead	1,870	505	27	2,490	533	21
Magnesium	45	15	33	168	81	48
Tin.....1,000 long tons	196	33	17	186	2	1
Zinc	2,167	843	39	3,230	986	31

[1] Exclusive of U.S.S.R.
[2] Bureau of Mines cannot publish U.S. figure separately.
[3] Year ended June 30, 1957.
[4] In 1957, U.S. production of antimony was 709 short tons.
[5] In 1950, U.S. production of chromite was 404 short tons.
[6] Less than 1 percent.
[7] In 1950, U.S. production of tin was 94 long tons.

Source: Mineral Yearbook data.

If technologic and economic changes permit the use of known but presently submarginal resources, self-sufficiency is attainable also in aluminum, copper, iron ore, manganese, titanium, and tungsten. In 1958 domestic production of cobalt rose to the equivalent of almost our normal requirements. Increased world prices helped to boost domestic production and expanded reserves so that henceforth we would be able to be self-sufficient in case of emergency for many years. One Idaho property alone has enough cobalt in measured, indicated, and inferred reserves to supply all our needs for 20 years or more at any previously demonstrated rate of consumption. Termination of the Government purchase contract and a drop in the world price, however, has resulted in a decision to close down this property.

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Until the mid-1930's the United States was actually a potential exporter of zinc but increasing consumption has altered the picture so that both zinc and lead have to be imported. The present need is to maintain a sufficient production base to assure adequate supplies if deliveries from overseas should be cut off. Similar problems exist with respect to antimony, columbium-tantalum, and several minor metals of which we have substantial but by no means adequate known reserves.

III. Distressed Areas in the Mining Industries

Individual industries in special jeopardy

By far the most important distressed segment of the mining industries in terms of size and number of establishments and numbers of persons affected, is the lead and zinc industry. Most of the other industries which are especially distressed at the present time are concerned with the production of strategic materials which have been stimulated by Government assistance programs of one sort or another but which are now abandoned to free competition. This list includes antimony, low-iron asbestos, chromite, cobalt, columbium-tantalum, fluorspar, and tungsten.

The anthracite industry is caught between a declining market and increasing costs. While many bituminous coal mining districts are active and more or less prosperous, in many formerly prosperous communities, particularly where the mines are small or are situated some distance from rail transportation, employment has dwindled.

Most of the gold mines that were closed in 1942 by War Production Board Order L–208 have never reopened. When the price of the metal was boosted to $35 gold mining became generally profitable but today this price leaves little or no margin above increased mining costs. This once prosperous domestic industry has declined so that less than a dozen lode mines are being operated for gold as the principal product. The silver industry is also caught in the squeeze between rising costs and the Government sale of silver for industrial use at a fixed price.

Depressed mining districts

Since the days of the 49'ers, mushroom mining camps have sprung up and declined, leaving ghost towns in their wake. In the early days, however, the miners could usually find employment in a not too distant camp and the physical assets represented by the abandoned mine plant and commercial facilities tended to be rather small. Today, however, the mining industry is no longer characteristically isolated in sparsely populated areas. Even in the Western States where mining is still a dominant industry, the communities have grown to substantial size and have taken on a permanent character. Under these circumstances the communities affected cannot be abandoned when the mines close. The inhabitants remain in their homes even after employment opportunities cease to exist.

The Tristate region of Kansas, Oklahoma, and Missouri is one of the worst sore spots at present. Until a relatively few years ago this area was the principal domestic source of lead and zinc, and other activities in the region were largely dependent upon mining. The situation in this region has been investigated by a special subcommittee of the

Committee on Interior and Insular Affairs headed by Representative Ed Edmondson of Oklahoma. A copy of the report of this subcommittee is appended to the record of the hearings on House Concurrent Resolution 177.

Another important and widespread area of depression is the anthracite region in the general vicinity of Wilkes-Barre, Pa. Bituminous coal mine communities which have suffered severely from changing conditions are mostly situated in Kentucky, West Virginia, and southwest Virginia.

The impact of retrenchment in the metal mining industry has been felt most seriously in the Western States, especially Nevada.

IV. General Effects of Mine Shutdowns and Reduced Employment

National effects

Loss of mineral reserves in flooded and caved workings; deterioration of average grade of ore due to overselective mining; cutbacks of exploration and development; halting of discovery of new deposits and of technologic progress.

Local effects

Ghost towns and blighted communities, exhausted unemployment benefits and relief funds, "creeping paralysis" affecting retail trades, transportation, and related industries, increased tax burdens and reduced real property valuations for tax purposes, permanent dispersal of managerial and engineering staffs familiar with local conditions, migration of younger workers, deterioration of human resources, and loss of skills of older workers because of disuse.

V. Causes of Depressed Conditions in Mining Industries

Symptomatic

Price declines, rising costs, overproduction by foreign mines resulting in increasing U.S. imports, decreased employment opportunities, miners seeking jobs in other industries.

Natural and general economic handicaps

Wage advances, deterioration of remaining reserves, exhaustion of major deposits, substitution or shrinking markets, local tax levies, transportation costs, discovery of new and richer deposits.

U.S. Government actions

Stockpile purchases, barter transactions, stopgap supports; expansion goals set too high (or too soon), artificial stimulation of foreign production by financial grants, loans, purchase contracts, technical assistance; antitrust laws, tariff reductions.

VI. Forms of Government Assistance to Mining

Several kinds of Government aid or regulation are beyond the scope of this report. Taxation, labor laws, health and safety requirements, technical assistance, educational and research activities, title acquisition, public land policies, mineral leasing, and a variety of regulatory measures in the interest of public welfare must be passed over without comment. The last-named category includes regulations concerning

such varied matters as transportation, power projects, marketing practices, stream pollution, and security sales. Government activities in the fields of access roads, public power, exchange controls, export licensing, statistical and economic services, areal and local geologic mapping, mineral identification, mine inspection, investigation of mine accidents, and certain of the problems related to national defense are likewise omitted from discussion. The Atomic Energy Commission is responsible for a significant revival of mining in several States. Uranium mining has become a major industry. The AEC is also a factor in providing markets for several other mine products. A review of the activities of this highly diversified agency cannot be undertaken at this time.

Mention should be made of the exploration assistance for strategic and critical minerals by the former Defense Minerals Exploration Administration which is credited with adding $585 million to the value of the Nation's mineral resources. The Office of Mineral Exploration, which succeeded DMEA on September 11, 1958, recently reported that it had received 44 applications for assistance relating to 20 commodities and covering proposed work in 16 States. OME activity in the fiscal year started July 1, 1959, however, will be much curtailed because of a drop in the agency's appropriation from $2,669,300 last year to $1,100,000 for the current fiscal year.

Tariff protection, historically the main bulwark against foreign competition, was formerly handled directly by Congress. In the 1930's, however, the regulation of imports was strongly influenced by the reciprocal trade treaty negotiations program. Tariff-cutting authority was delegated to the President along with the power to make trade agreements with foreign countries without congressional approval. A later section of this report reviews briefly the impact on the mineral industries of the operations and policies under the trade agreements legislation. Separate sections are also included on stockpiling and barter, respectively.

Financial assistance to mining companies was offered by the American Government through the Reconstruction Finance Corporation to encourage mineral production during World War II. This aid was in the form of loans to finance operators who could not get money from private banks. There was no intention of foreclosing where such ventures failed but the agreements created liens which remained against the properties. Owners were naturally reluctant to cloud their titles and consequently relatively few availed themselves of this form of assistance.

Advances of venture money to mining enterprises without liens began with the Economic Cooperation Administration in 1948. These advances were made against production. If no production resulted, there was no further obligation on the part of the beneficiary. If and when the desired product was generated it was credited against the advance and delivered to U.S. stockpiles. Outright ECA grants were also made in several foreign countries and geological surveys were made in certain areas in Africa without repayment obligations.

During the Korean emergency, the Defense Materials Procurement Agency was able to make advances against production in both foreign and domestic areas.

Various kinds of American Government financial assistance other than direct equity participation, are available in the foreign field

through the Export-Import Bank (XM) and the World Bank-International Bank for Reconstruction and Development (IBRD). Small domestic mining enterprises may also qualify for Government loan assistance under the Small Business Administration. Government guarantees are also available to American private investors in foreign mining enterprises.

VII. Our Stockpile Position

The sensible policy of Congress is to provide a national stockpile of strategic and critical metals and minerals as a permanent military reserve and for possible use in rebuilding our economy after enemy bombing. But stockpiles do not take the place of a vigorous domestic mining industry. They are merely a part of the first line of defense. The total mobilization base consists of three major components—domestic production, reliable imports in time of emergency, and stockpiles.

Although the need for storing adequate supplies of raw materials for future emergencies was clearly demonstrated during World War I, almost no progress was made toward this objective until World War II began in Europe. During that interwar period few Americans believed that a second and more dreadful conflict was in the making. After World War II, however, the U.S. Government undertook an aggressive stockpile program which was implemented by the Strategic and Critical Materials Stockpiling Act (Public Law 520) in 1946 and which was stepped up after the outbreak of the Korean war.

As an abstract principle stockpile acquisitions should be scheduled so as to avoid serious dislocation of commercial markets. In fact, various proposals have been made to employ stockpiling as a stabilizing influence on markets for the respective commodities. Some persons have gone so far as to advocate using the national stockpile as a buffer stock, buying materials when they are cheap and releasing them when prices are high. The latter plan, which is similar in many respects to the "ever normal granary" for agriculture, has not met wide approval. The tail easily could wag the dog and the real purpose of military security might become secondary to experimentation in the field of governmental regimentation and price control.

International tensions resulting from the Korean emergency and the cold war gave added impetus to efforts to fill our stockpile objectives as quickly as possible. This timing, however, resulted in stepping up purchases when free world supplies of most mineral raw materials were severely limited and demand was abnormally high due to the rapid economic recovery in Europe and other causes. To meet the stockpile objectives and also to implement our policy of economic aid to foreign nations, our Government provided various incentives for expanding production capacity both at home and abroad. As pointed out by Hollis M. Dole in the recent hearings before the subcommittee, much of the material was acquired from foreign sources over the protests of domestic mining industries.

By mid-1957, before some of the new production capacity was in actual operation, the minimum stockpile objectives for most mineral commodities had been filled. In January 1958, a Special Stockpile Advisory Committee, appointed by the Office of Defense Mobilization, affirmed that the United States must be prepared to meet the

materials needs of major wars, limited wars, and economic and political warfare. However, this committee supported the recommendation that stockpile goals should be estimated on the basis of a 3-year emergency period instead of a 5-year basis. Although a new set of maximum objectives was established, the committee found that inventories of most materials already exceeded these goals and in many cases exceeded authorized acquisitions for the supplemental stockpile. In November 1958 the Office of Civilian and Defense Mobilization reported that as of June 30, 1958, basic stockpile objectives for all materials were valued at $2,900 million and that materials valued at $2,800 million were on hand. Including maximum objectives, the overall goal was $4,400 million of which materials worth $3,600 million were on hand. Since that date the narrow gap between inventories and acquisition goals has been narrowed further.

Testifying before the Subcommittee on Mines and Mining some weeks ago, Russell H. Hughes of the OCDM indicated that maximum stockpile objectives had been equaled or exceeded on all mining industry items except amosite asbestos, antimony, Surinam-type bauxite, chemical-grade chromite, and steatite block talc. Selenium (a copper refinery byproduct) and silicon carbide were also mentioned along with a few nonmineral commodities as still eligible for defense procurement. OCDM has revealed that excess inventories valued at $1,800 million were on hand and metals and minerals valued at $700 million were in the Defense Production Act (Public Law 733) inventories.

Only three general domestic minerals purchase programs are still active and one of these, the carload lot manganese program, will terminate on August 5, 1959, unless extended. The other two, one for beryl and the other for strategic mica, may run a year or two longer. However, some $718 million worth of forward contingent contracts for materials were still outstanding as of January 1, 1959, including $461 million to come from foreign sources.

Additional accumulations of strategic materials have been acquired by the Government under specific provisions of other legislation. The Mutual Security Act of 1954 (Public Law 162) and the Federal Property and Administrative Services Act of 1949 (Public Law 152) provide for transfer of strategic materials to the national stockpile without reimbursement.

As a general rule materials in the strategic stockpile cannot be disposed of for nonemergency uses without approval of Congress. This rule however, does not apply to Defense Production Administration inventories. In 1958 a program was initiated for disposing of offgrade material not readily usable in an emergency. The El Paso stockpile of 298,950 long tons of low-grade manganese ore has been sold. Other items which have been offered for disposal include mullite, gem diamonds, platinum group metals, baddeleyite and zircon concentrates. Disposal plans are designed to avoid any serious market impact.

VIII. The Barter Program

In 1954, Congress authorized a new supplemental stockpile for strategic and critical materials over and above the maximum and long-term objectives of the national stockpile. Provisions for release of these materials are the same as those of the Strategic and Critical Materials Stockpile Act.

Under the Agricultural Trade Development and Assistance Act the Commodity Credit Corporation was authorized to barter strategic and other materials for surplus agricultural commodities. Some of these materials, whether acquired by direct barter or by purchase with foreign currency, could be transferred directly into the national stockpile; the remainder were placed in the supplemental stockpile.

At the end of April 1957, the barter program was suspended briefly to allow for a study of safeguards against the substitution for dollar sales without a net gain in total exports. From July 1, 1954, through June 30, 1959, barter contracts totaled about $833 million. About one-half of this was for the supplemental stockpile. Following another suspension and study period, new and more detailed regulations were issued in November 1958. Barter contracts during the last half of 1958, all for the supplemental stockpile, totaled $36 million.

A 1958 amendment to the law required the President to designate the materials eligible for barter. At the end of February 1959, a list of 26 metals and minerals commodities was issued and early in March, manganese ore and ferromanganese from India were added.

As of December 31, 1959, agricultural commodities valued at $5,400 million were on hand and nearly $3,300 million worth were held as collateral on price-support loans to farmers.

A contentious feature of the barter program has been whether it has helped to expand foreign production capacity and to strengthen foreign producers who compete with American miners. On the other hand it has been contended that in many cases the barter deals relieved the world markets of burdensome surpluses so that prices could find a normal level in balance with current supply and demand.

IX. Operations Under the Trade Agreements Program

Under section 350(a) which was added to the Tariff Act of 1930 by the Trade Agreements Act of June 12, 1934, as amended, the President is authorized to enter into foreign trade agreements and to "proclaim such modifications of existing duties and other import restrictions, or such additional import restrictions, or such continuance, and for such minimum periods, of existing customs or excise treatment of any article covered by foreign trade agreements, as are required or appropriate to carry out any foreign trade agreement that the President has entered into hereunder."

The several extensions of the Trade Agreements Act since 1951 have contained the caveat that enactment of the act "shall not be construed to determine the approval or disapproval by the Congress of the executive agreement known as the General Agreement on Tariffs and Trade." Multilateral tariff negotiations for more comprehensive lowering of trade barriers under GATT have been sponsored by the contracting parties and this is the most important agreement that the United States has entered into under the provisions of the Trade Agreements Act. The original GATT agreement was concluded by 23 countries at Geneva in 1947 and as many as 39 countries have participated in the various meetings.

Increases in duties under this act may not exceed 50 percent of the rate of duty existing on July 1, 1934, except that any specific duty existing on that date may be increased by as much as 50 percent of the ad valorem equivalent on July 1, 1934; also import quotas may be imposed.

No transfers can be made between the dutiable and free lists of the Tariff Act of 1930.

In respect to reductions in duties under the act, provision is made for subsequent review and investigation by the Tariff Commission. If the Commission finds that increased imports, either actual or relative, have contributed substantially toward causing or threatening serious injury to the domestic industry producing "like or directly competitive products," it must recommend to the President "the withdrawal or modification of the concession, its suspension in whole or in part, or the establishment of import quotas, to the extent and for the time necessary to prevent or remedy such injury." The Trade Agreements Extension Act of 1953 authorizes the President to regard the unanimous findings and recommendations of one half of the number of Commissioners voting as those of the Commission and in case of a 50–50 split, he may regard the findings of either group as those of the Commission. However, in the final analysis the President has the authority to accept, reject, or modify the Commission's recommendations.

By Executive Order 10401, issued October 14, 1952, the President established formal procedure for reviewing escape-clause actions. Paragraph 1 of that order directs the Tariff Commission to keep under review developments with regard to products on which trade agreement concessions have been modified or withdrawn and to make periodic reports concerning such developments. Paragraph 2 of this order provides that the Commission is to institute formal investigation in any case whenever, in the Commission's judgment, changed conditions warrant it, or upon request of the President, to determine whether, and if so, to what extent, the withdrawal, suspension, or modification of the concession remains necessary.

The Trade Agreements Extension Act of 1958 provides that the Congress may override the President's rejection of a Tariff Commission recommendation for escape-clause action. To do so, however, the Congress must adopt within 60 days by a two-thirds vote of each House a concurrent resolution approving the Commission's recommendation.

According to the statutory escape-clause procedure established in section 7 of the Trade Agreements Extension Act of 1951, an investigation by the Tariff Commission may be initiated by the Commission upon the request of the President, upon resolution of either House of Congress, upon resolution of either the Senate Committee on Finance or the House Committee on Ways and Means, upon its own motion, or upon application by any interested party.

The lead-zinc industry has had two unanimous findings by the Tariff Commission of injury due to excessive imports. The first decision (in May 1954) was rejected by the President, who declined to act but instead initiated stockpile purchases and, at a later date, barter acquisitions.

On September 27, 1957, the Emergency Lead-Zinc Committee again applied for relief; an investigation was instituted October 4, 1957, and the investigation was completed on April 24, 1958. The Commission unanimously found that escape-clause relief was warranted but divided equally on the remedy necessary. One group merely recommended restoring the rates provided in the Tariff Act of 1930 which had been reduced by 50 or 60 percent. The other group recom-

mended the application of the maximum permissible rates of duty plus quotas. Permissible increases through escape-clause action were as follows: On lead in ore from 0.75 to 1.8 cents per pound and on pig lead from 1.0625 to 2.55 cents per pound; on zinc in ore from 0.6 to 1.8 cents; and on slab zinc from 0.75 to 2.25 cents per pound.

On June 20, 1958, the President announced that he was suspending consideration of the Commission's recommendation until after Congress completed its consideration of the minerals stabilization plan presented with his approval by the Secretary of the Interior. After the aforementioned bill failed of passage, the President, on September 22, 1958, issued proclamation 3527 (23 F.R. 7475) effective October 1, 1958, limiting imports to 80 percent of the average annual commercial imports (excluding stockpile purchases) during the 5-year period 1953–57. The quota suggested by one group of Tariff Commissioners was 50 percent and both groups it may be noted, recommended increases in duty which were not provided for in the President's proclamation.

The lead-zinc case is the only one involving mining industry products presently under study by the Committee that resulted in any action. Investigations have recently been completed by the Tariff Commission on Mercury (November 1958), Tungsten (November 1958), and Iron Ore (March 1959) but these were undertaken pursuant to resolutions of the Senate Committee on Finance.

In mid-September 1958, soon after the Congress broadened the security clause of the Trade Agreements Extension Act, the leading domestic cobalt producer filed a petition with the OCDM under section 8 of that act. The applicant believed that the broad grant of authority under this act could be used to extend the company's Government purchase contract on a contingent basis or alternatively to impose import tariffs or quotas to protect the domestic industry. As reported in the testimony of F. A. McGonigle to the Subcommittee on Mines and Mining, the petition pointed out that foreign cobalt comes from central Africa where unrest and violence could cut off our supplies in an emergency. No official action resulted from this petition.

Application for a fluorspar investigation was made to the Tariff Commission by Ozark-Mahoning Co., a leading producer, on October 20, 1953. An investigation was begun but it was discontinued and the application dismissed at the applicant's request. A second investigation was instituted on August 1, 1955, pursuant to a resolution of the Senate Committee on Finance. This investigation was completed January 18, 1956, and the vote of the Commission was equally divided (3–3). On March 20, 1956, the President decided not to modify the treaty concession.

A serious complaint against potential relief to a raw-material producing industry under the escape clauses is the fact that compensatory duties or quotas on manufactured and semimanufactured products cannot be suitably provided when or if protection is given to the raw material producing industry. The quota system that became effective October 1, 1958, on imports of lead and zinc was severely criticized in the subcommittee hearings on the grounds that it allows slightly manufactured lead and zinc items to be imported without limitation. Secretary of the Interior Fred A. Seaton recently stated that the possible extension of the quotas to manufactured products was under study.

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X. "Conservation" of Mineral Resources

Conservation has been defined[1] as the most efficient practical recovery, processing, use and reuse of known mineral raw materials that present-day techniques permit. It is promoted by the discovery of new sources of the raw material now used, the development of better methods for obtaining them, the reduction of waste in production and utilization, and the discovery of economical substitutes. The semiofficial concept of conservation is "the wise use of natural assets to prevent depletion and at the same time to produce wealth." This concept is literally applicable to soil, water, timber, grazing lands, wildlife, and majestic scenery but the word "depletion" raises questions in respect to mineral resources.

Toward the end of the 18th century, Malthus expounded the doctrine that world population may be severely limited by food supplies. In the 1930's, a similar philosophy became popular in Washington as applied to industry and its mineral aliment. Disturbed by the rapidly growing and seemingly insatiable world appetite for minerals a small but highly articulate group argued that the United States was fast becoming a "have not" nation and that our dwindling resources could best be conserved by buying our minerals abroad. This philosophy became unpopular during World War II but was revived in the Paley Commission report issued in 1952.

It was assumed that future generations were destined to inherit a "plundered planet" utterly devoid of useful metals and minerals. Inasmuch as a "mine is a wasting asset," it would seem logical to suppose that "the expanding rate of mineral consumption will at length exhaust the earth's supply of minerals, one by one." On the basis of this conclusion, it made sense to use up the exhaustible resources of other nations in order to improve our own relative position in the long, lean years to come.

The foregoing conclusion, however, failed to take account of man's ingenuity. Agricultural science has demonstrated that the yield of food per acre of arable land can be vastly increased, that new lands can be brought into production, and that potential sources of food supply can be tapped which Malthus never dreamed of. Our geologists, mining engineers, and extractive metallurgists are resourceful. Scientific methods have been devised for finding hidden ore deposits which defied discovery by the old bacon-and-beans type prospector. Committee members only recently visited the Grace mine, a large iron mine in Pennsylvania owned by the Bethlehem Steel Co., where the vast new orebody had been found by modern geophysical techniques. Mining methods have been improved so that output per man per day is greatly increased. The average cost of mining a ton of rock and ore in place is less now than ever before, notwithstanding the explosive rise in wages and certain other elements of cost. Metallurgical advances have reduced losses of the valuable constituents, enabling us economically to work lower grade ores as well as to make more efficient use of richer ores. And finally, we have succeeded in producing manmade substitutes which can take the place of some of our scarcer minerals. Looking to the future, we can glimpse the

[1] Ridge, John Drew, in "Economics of the Mineral Industries," American Institute of Mining, Metallurgical, and Petroleum Engineers, New York, N.Y., 1959, p. 564.

economic feasibility of splitting the atoms of abundant elements and recombining the fragments to suit our requirements.

Paradoxical as it may seem, experience has demonstrated that an actively healthy mining industry can not only perpetuate itself but can even expand. While one deposit is being mined out, new deposits are being discovered and opened up.

Given adequate incentives, our known mineral resources tend to increase, not diminish. Lacking suitable incentives, our mines will close, exploration will stop, and the remaining reserves in many areas will become inaccessible.

In a recent paper (Mining Engineering, February 1959, pp. 155–156), C. W. Merrill, of the Bureau of Mines, analyzed the price records of seven representative mineral commodities for the 68-year period through 1957. These records show a substantial overall fall in real prices in terms of dollars of constant purchasing power. Inasmuch as this downtrend has occurred during a period of almost fantastic increases in demand for mineral products, it contradicts the widely held concept that heavy drafts on a mineral resource inevitably lead to scarcity and rising prices.

XI. Summary of Industry Recommendations

Although the purpose of the hearings was to analyze the plight of various segments of the mining industry and the causes for their depressed condition, a number of witnesses proposed possible relief measures and many of them were encouraged by members of the subcommittee to discuss such measures.

It was generally agreed that major segments of the domestic mining industries, including most of the nonferrous metal producers, cannot survive under present conditions without some form of Government assistance, such as subsidies, premium prices, tariff protection, or import quotas, or a revaluation of the American dollar.

The testimony of most witnesses indicated that there is nothing wrong with their industries that adequate tariffs or import taxes would not cure. For many metals, not including copper, the ad valorem equivalent of the rates written into the Tariff Act of 1930 would more than suffice to protect the domestic miners today. During and after World War II, prices climbed upward but the specific rates of duty have remained the same or have been reduced in accordance with reciprocal trade policies.

Import taxes and excise taxes on foreign merchandise are in effect tariffs.

There is a considerable body of opinion that a duty of 4 cents a pound would avoid excessive competition from imports of the major nonferrous metals. Instead of a flat rate, many believe the tariff should be on a sliding scale, reducing to zero when domestic market prices rise above a suitably established "peril point." In the case of lead and zinc, the peril points appear to be 15½ and 13½ cents, respectively. No real complaint was made in the hearings, however, as to the existing rate of 1.7 cents per pound on copper, increasing to 2 cents, if the price should fall to below 24 cents per pound.

One weakness of subsidy plans, of course, is that necessary money has to be appropriated by the Congress more or less on an annual basis. The abrupt ending of the domestic tungsten appropriation

under Public Law 733 is a memorable example of what may happen. No mining industry can plan long-range development on a year-to-year basis. The tariff approach is subject to review but, since it is written into the law, it is less likely to be changed suddenly.

Somewhat the same objection as that raised against subsidies applies to the premium-price plan. Notwithstanding adverse criticism from many large operators this plan was a great help to small miners and served its purpose during World War II. In common with certain other subsidy programs, this plan may be established and administered so as to avoid the dilemma in some industries where a few low cost producers derive most of the benefits of a guaranteed price which merely allows other higher cost producers to survive. Robert Palmer's testimony confirms the fact, however, that there were administrative problems which involved personalities and which caused dissensions.

Merrill Shoup urged a subsidy on newly mined gold. However, this is a special situation inasmuch as virtually any other plan would alter the price of the metal and thereby induce a long train of consequences including the possibility that revaluation would help the U.S.S.R. more than the United States and its allies. The American Mining Congress, on the other hand, advocates the establishment of a fixed ratio at which gold and silver will be convertible here and, if possible, also abroad.

A proposal that possesses the advantages of subsidies but largely avoids the risk of abrupt termination, is to use tariff receipts to provide the funds for making payments. This device is particularly applicable to strategic materials which are largely imported but which we hope to continue to produce in some quantity domestically. Antimony, Arizona asbestos, chromite, manganese, and possibly cobalt, columbium, and tantalum are candidates for this type of protection.

The American Mining Congress recommends (1) import tariffs for commodities of which the United States is a substantial producer, (2) an adequate program tailored to each individual case to maintain continuance of domestic industries that produce only a small percentage of our requirements, and (3) import quotas where import taxes and tariffs are not feasible.

The quota system has operated very well indeed in the sugar industry for many years. The only experience in the mineral industries has been with lead and zinc and with petroleum. In the case of lead and zinc, its apparent failure may be simply due to setting the quota too high—at 80 percent of the rather heavy import levels during a base period instead of at 50 percent as recommended by the Tariff Commissioners. Also, it is believed by industry people that the quota as imposed allows too many slightly manufactured products to be entered outside the quota.

To be truly effective, import restrictions, whether quotas or tariffs, must include manufactures and semimanufactures as well as the class of raw materials from which they are manufactured.

Some of the former opposition to tariff relief for the lead and zinc miners was due to the fact that no suitable provision was made to compensate smelters and users of the metals for higher costs of their base materials.

The Western Governors' Conference meeting in Colorado Springs, Colo., on February 26, 1958, recommended early and favorable action by the Tariff Commission on lead, zinc, tungsten, and mercury—also

tariff relief on copper. It favored legislation to provide sufficient import control on cobalt, tungsten, mercury, fluorspar, columbium (and possibly manganese). And for antimony, chrome, asbestos (and possibly manganese), subsidies were recommended to be paid for out of tariff receipts. In respect to gold and silver, the only recommendations were for a free market and for a boost in the depletion rate from 15 to 23 percent. In respect to uranium, the conference anticipated the recommendations of witnesses before the Subcommittee on Mines and Mining that AEC should favor purchases from domestic rather than foreign mines. It also urged AEC to provide a purchase program for thorium or else to release it from Government control and to cease purchases of foreign monazite at the expense of closing domestic mines.

F. A. McGonigle suggested three major areas in which the subcommittee might wish to recommend legislation:

> (1) Establish a national policy and provide implementation "to maintain in being some reasonable production of every important strategic and critical metal and mineral so that the Nation will always have adequate supplies * * * which can be expanded if need be."
>
> (2) Transfer all Government-owned materials to the strategic stockpile or to the supplemental stockpile where they will be under control of the Congress. Also amend section 3(e) of the Stockpiling Act to assure that "obsolescence" in the case of metals and minerals should be based only on possible "deterioration," not because of changes in technology or in estimates of military requirements.
>
> (3) Create a Department of Mineral Resources with a Secretary of Cabinet rank.

The manganese industry spokesmen raised some additional questions that may have significance beyond the interests of a single industry. They claim that the anticipated termination of the carlot purchase program for manganese on August 5, 1959, breaches an apparent commitment by a responsible official of the Government. In hearings before the Senate Committee on Interior and Insular Affairs on May 24, 1956, Dr. Arthur S. Flemming, then Director of ODM (now Secretary of Health, Education, and Welfare) made a statement easily interpreted as a promise that carlot purchases would be continued at least until June 30, 1961.

Mining operations require years of effort before they can be brought into production and cannot be arbitrarily shut off by a change in Government policy without irreparable damage being incurred, not only to our mineral reserves but to the national economy as well. The investment involved in a continuation of the "carlot" manganese program for another year is inconsequential by comparison, and the country will have the added defense materials on hand at the end of the period. This at least would be preferable to acquiring additional Government manganese from foreign sources through barter deals, which are understood to be active in the Department of Agriculture.

Another point raised by the manganese industry relates to an inadvertent overstatement by Director Leo A. Hoegh, of the Office of Civil and Defense Mobilization, of the quantity of manganese contained in Government stockpiles. The statement, which over-

stated by many times the amount of manganese contained in Government ore stockpiles, caused Director Raymond V. Long, of the Virginia Department of Conservation and Development to state—

> there is a stockpile of 28 million tons of manganese, Government owned, which at the present rate of usage for the past 2 years, would serve the steelmaking industry for at least 10 years * * * I do not see how this Department could reasonably plead for a continuation of this stockpiling program in such circumstances * * *

Actually the quantity involved was 28 million long-dry-ton units of 22.4 pounds of contained manganese each, which is equivalent to only about 3 or 4 months of current national requirements.

XII. Departmental Recommendations

The committee on May 25, 1959, supplied copies of House Concurrent Resolution 177 to and requested reports from the Departments of the Interior, Agriculture, Commerce, and Defense, the Atomic Energy Commission, General Services Administration, Office of Civil and Defense Mobilization, Tariff Commission, and the Bureau of the Budget.

As of the close of the public hearings of the Subcommittee on Mines and Mining, on July 2, 1959, a report had been received only from the Department of Agriculture. That report stated that "because this legislation would not affect the functions of this Department we have no recommendations regarding adoption of the resolutions." There is, however, an obvious significance to the domestic mining and minerals industries of importations of foreign metals procured under barter transactions administered under the supervision of the Secretary of Agriculture. Among the metals currently eligible for barter procurement are manganese, chromite, fluorspar, and zinc—all representative of domestic industries that are currently in serious trouble as shown by testimony before the Subcommittee on Mines and Mining.

At later dates reports were received from several other agencies.

The General Services Administration defers to the views of the Office of Civil and Defense Mobilization and the Department of the Interior. The Tariff Commission states that it has no "program" that could provide increased production and employment in depressed domestic industries, and that it takes no position on the "policy" question whether curtailment of imports is a desirable means of accomplishing such objective.

The Bureau of the Budget sees no need for enactment of the resolution. This conclusion appears to have been based in part on a tentative report submitted by the Department of the Interior advancing a similar conclusion. Evidently the Department of the Interior, at a later date, changed its report to one of "no recommendation."

The Department of Commerce concludes that justification for Government assistance to the mining and minerals industries as cited by the resolution is "not conclusive," and opposes a review of existing programs for the purpose of increasing domestic output on the grounds that direct measures that would be taken by the Government would

not contribute to the soundness of the industries and would be inflationary or costly to the taxpayer. The Department of Commerce fails to understand the severe impact of complete shutdowns of substantial segments of these industries or the distress in certain districts whose mines are closed, even though other segments and other mining districts are producing at satisfactory levels. It does not seem to realize that the avenues of relief provided by law for producers who are harmed by unbalanced imports, such as sections 7 and 8 of the Trade Agreements Act, are not "open" to such producers in any automatic sense but require administrative action to open them. It is hoped that such action could possibly result from the very kind of administrative review contemplated in the resolution.

The Director of the Office of Civil and Defense Mobilization states that there is no need for a special review of programs related to the mining and mineral industries from the standpoint of mobilization planning since these industries are examined from time to time in the regular course of planning. Also, it is stated that OCDM and other agencies already have the authority for actions that might be needed toward sustaining domestic production required in case of an emergency.

Both the Department of Commerce and the OCDM seem to have overlooked or given insufficient weight to the contents of various policy documents, including the November 1954 report of the President's Cabinet Committee on Minerals Policy, concerning the necessity of maintaining at all times domestic production in being for the mobilization base. The Cabinet Committee, for instance, stated that a strong, vigorous and efficient domestic mineral industry is essential to the long-term economic development of the United States. It recommended that the—

> supply-demand situation for each of the metals and minerals be evaluated periodically on a case-by-case basis to establish the proper level of efficient domestic production required as an adequate component of the mobilization base.

It stated that when it is found that the level of such production in the case of any particular mineral is, or is likely to become, insufficient to serve as an adequate component, a comprehensive program involving the best use of all of the various existing authorities of the Government should be developed to maintain or to achieve that level of domestic production, consistent with the basic foreign and domestic economic policies of the Government. It further stated that in the event the present authorities of the Government are inadequate to accomplish the desired objective, appropriate legislative recommendations should be prepared. The testimony before the Subcommittee on Mines and Mining gives grave reason to doubt that these recommendations are being observed. At least the mining industry representatives are unconvinced that these procedures are being followed.

The Atomic Energy Commission stated that it knows of no basis for considering the domestic uranium mining industry as "critically depressed," and that it looks to that industry for the bulk of its anticipated future requirements for uranium. The Commission does not feel that the resolution is needed so far as the Commission's programs are concerned.

The Department of the Interior submitted a "no recommendation" report, concurring in the objectives of the policy statement set forth in section 2 of House Concurrent Resolution 177 and indicating a readiness to make appropriate investigations and submit reports. The Department's interpretation of section 3 of the resolution is that it would imply a need for virtual total protection to domestic producers against competition from foreign sources of ores, metals, and minerals. This is not the committee's interpretation, which is that protection from a critical dependence upon foreign sources is essential to national security and the welfare of the consuming public.

The reports referred to follow:

DEPARTMENT OF AGRICULTURE,
Washington, D.C., June 18, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives.

DEAR CONGRESSMAN ASPINALL: We appreciate the opportunity to report, as requested by your letter of May 25, 1959, on House Concurrent Resolution 177 and seven identical resolutions numbered consecutively, which would request the President to have reviews made of the existing programs of the executive branch relating to the domestic mining and mineral industries, to advise the Congress as to the actions taken or proposed to be taken to use such programs more effectively to provide for increased production and employment in such critically depressed industries, and to submit any reorganization plans or recommendations for legislation that may be necessary to accomplish the objective of the resolutions.

Because this legislation would not affect the functions of this Department, we have no recommendation regarding adoption of the resolutions.

Sincerely yours,

TRUE D. MORSE, *Acting Secretary.*

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., July 15, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of May 25, 1959, requested the comments of GSA with respect to House Concurrent Resolution 177. You advised that seven identical resolutions have also been introduced: House Concurrent Resolutions 178, 179, 180, 181, 182, 183, and 184.

House Concurrent Resolution 177 would request the President (*a*) to have reviews made of existing programs of the executive branch with the purpose of using them more effectively to provide for increased production and employment in domestic mining and milling industries, (*b*) to advise the Congress as to the actions taken or proposed to be taken for this purpose, and (*c*) to submit any reorganizations plans or recommendations for legislation that may be necessary to accomplish such objective.

The proposed resolution involves considerations which are primarily related to the functions and responsibilities of the Office of Civil and Defense Mobilization and the Department of the Interior. We therefore would defer to the views of those agencies.

The Bureau of the Budget has advised that there is no objection to the submission of this report to your committee.

Sincerely yours,

FRANKLIN G. FLOETE, *Administrator.*

UNITED STATES TARIFF COMMISSION,
July 15, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives.

DEAR MR. CHAIRMAN: This is in response to your request of May 25, 1959, for a report on House Concurrent Resolution 177 of the 86th Congress. Identical proposed resolutions have been introduced, as follows:

House Concurrent Resolution 178 (Baring)
House Concurrent Resolution 179 (Edmondson)
House Concurrent Resolution 180 (Pfost)
House Concurrent Resolution 181 (Powell)
House Concurrent Resolution 182 (Rogers)
House Concurrent Resolution 183 (Saylor)
House Concurrent Resolution 184 (Ullman)

After a series of introductory recitals, the resolution would request the President to have reviews made of the existing programs of the departments and agencies of the executive branch for the purpose of using them more effectively to provide for increased production and employment in critically depressed mining and mineral industries; to advise the Congress at the earliest possible date as to the actions taken or proposed to be taken to this end; and to submit any reorganization plans or recommendations for legislation that may be necessary to accomplish the objectives of the resolution. This is followed by certain declarations set forth in sections 2 and 3 of the proposed resolution.

The Tariff Commission has no program which could be used to provide for increased production and employment in critically depressed domestic mining and mineral industries, and there are no statutes that impose upon the Commission the responsibility for developing such programs. Implicit in the proposed resolution is the suggestion that the curtailment of imports may be necessary or desirable in order to accomplish the objective of the resolution Whether or not the curtailment of imports is a desirable means of accomplishing the objective of the resolution is a question of policy on which the Tariff Commission takes no position.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

JOSEPH E. TALBOT, *Chairman.*

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EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., July 15, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: This will acknowledge your letter of May 25, 1959, inviting the Bureau of the Budget to comment on eight identical resolutions, House Concurrent Resolutions 177 through 184, "Declaring the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands."

The resolutions would request the President to (1) review existing programs so as to use them more effectively to provide for increased production and employment in critically depressed domestic mining and mineral industries, (2) advise Congress of actions to be taken, and (3) submit reorganization plans or legislative recommendations for this purpose. In addition, section 2 states that it is in the national interest to foster and encourage (*a*) a sound and stable domestic mining industry, (*b*) discovery and development of domestic mineral resources, and (*c*) mining, mineral, metallurgical, and marketing research to promote uses of domestic mineral resources. Section 3 asserts that a sound and stable minerals industry, without critical dependence on foreign sources, is essential to the national security.

In separate reports to your committee, the Department of the Interior, the Department of Commerce, and the Atomic Energy Commission present numerous reasons which indicate that the resolutions appear unnecessary. The Bureau of the Budget similarly does not see any need for enactment of House Concurrent Resolutions 177 through 184.

Sincerely yours,

(Signed) PHILIP S. HUGHES,
Assistant Director for Legislative Reference.

THE SECRETARY OF COMMERCE,
Washington, D.C., July 17, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in reply to your request dated May 25, 1959, for the views of this Department with respect to House Concurrent Resolutions 177 through 184, identical resolutions "Declaring the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands."

What the resolutions would do

The identical House Concurrent Resolutions, in the preamble, note (1) the importance to the economy of the domestic mining industries, (2) that national security required the accumulation of stockpiles of strategic metals and minerals and the expansion of facilities for production, both domestic and foreign, (3) increased foreign production and decreased stockpile requirements resulted in drastic curtailment of domestic production, depressed domestic prices, economic disaster for individual firms, extensive unemployment, etc.,

(4) further delays in the recovery of domestic mining and mineral industries would cause irreparable damage to properties, waste human and natural resources, lose productive capacity, depress the national economy and threaten national security, and (5) governmental efforts to date have not alleviated these effects.

The resolutions then propose that a review be made of all existing programs, with the purpose of using them more effectively to provide for increased production and employment, and that Congress be advised as to action to be taken in this respect. In addition, reorganization plans or recommended legislation would also be submitted to Congress to accomplish these objectives.

In section 2 the resolutions state that it is in the national interest to encourage (1) the maintenance and development of a sound and stable domestic mining and minerals industry, and (2) the orderly discovery and development of domestic resources and research to promote efficient uses of domestic metal and mineral resources. In section 3 it is stated that the existence and maintenance of national stockpiles per se do not replace the essentiality to national security of the maintenance and development of a sound and stable domestic mining and minerals industry.

The Department's comment

A. Generally the Department of Interior would have a prime and direct interest in matters affecting the domestic mining and minerals industry. However, the Department of Commerce would be concerned with the adequacy of supply at reasonable prices for consumers of minerals and metals and it would also be concerned with the overall effect on the economy of actions which might result from the proposed review.

B. With a few, and for the most part minor, exceptions mining and minerals industries as a whole have made a profit during the 1958 recession and substantial improvement has occurred in the first quarter of 1959. Furthermore, the Federal Reserve Mining Production Index dropped only 8.6 percent in 1958 from the peak year of 1957. It is difficult to accept the assumption of general distress and drastic curtailment of production indicated in the resolutions, and yet this is the principal argument to justify action at this time by the Government.

C. Direct Government programs to increase output above levels normal for a given economic situation would of necessity have to bring about, directly or indirectly, an increase in the return to producers, such as subsidy payments to producers to achieve a designated return per unit of output or Government purchases sufficient in volume to raise market prices. It has been the consistent view of this Department that such artificial economic stimulants in the long run would hurt rather than benefit industry, since they would maintain marginal and submarginal operations, uneconomic in nature, give windfalls to low cost producers and in the end stifle expansion of the market and encourage development of substitutes. Furthermore, they would contribute to inflationary trends which would eventually weaken the economy. The alternatives of severe tariffs, import quotas or embargoes where domestic production does not meet the demand could also serve to raise prices but any advantage here would be more than offset by an increase in consumer costs. Finally, it can be questioned if any industry can be considered to be stable

and sound if it must continue to rely heavily on such Government assistance.

D. The resolutions state the encouragement of orderly discovery and development of resources and reserves, and research in utilization of such resources is in the national interest. By reason of the relatively small costs of such activities and the potential economic benefits that could stem from them, this Department would raise no objection to programs of this nature. However, such programs are already actively underway, principally under the direction of the Department of the Interior, and benefits from them are already evident.

Position of the Department

The Department does not support enactment of the resolutions for the following reasons:

1. The domestic mining and minerals industries as a whole are not in the serious condition implied in the resolutions and in this respect no emergency exists at this time with regard to a general recovery of mining and minerals activities.

2. Programs by the Government to provide subsidies, floor price guarantees, open market purchases, or similar measures required to increase output would not lead to a sound and stable industry since (1) they result in increasing dependence on the Government, (2) they continue and bring into production marginal and submarginal operations, and (3) they encourage greater use of substitutes as prices mount.

3. The higher cost of raw materials to consumers which would be inherent in most Government programs devised to increase output would contribute undesirably to the inflationary trend. Alternative assistance in the form of subsidy payments to yield a given price to the producer would add to an already heavy tax burden.

4. Suggested Government measures to increase the efficiency of industry and to lower costs through research in metallurgy, usage and marketing, and assistance in exploration and development of resources would in fact contribute to a stable and sound industry, but such activities have already been authorized and underway for many years.

5. For producers of a few specialized minerals, who may be in difficulties by reason of unbalanced imports, there are avenues of relief already open, such as section 7 and 8 of the Trade Agreements Act, under which claims can be studied and relief provided through increased tariffs, if justified.

6. In summary, justification for assistance to the mining and minerals industries cited by the resolutions is not conclusive. Furthermore, if direct measures by the Government to increase output are undertaken, as indicated by the resolutions, they would not contribute to the soundness of the industries and they would be inflationary in character or costly to the taxpayer. A review of existing programs for the purpose of bringing about such expansion is therefore not in the national interest.

We have been advised by the Bureau of the Budget that there would be no objection to the submission of this report to your committee.

Sincerely yours,

FREDERICK H. MUELLER,
Acting Secretary of Commerce.

GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE,
Washington, D.C., July 9, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of Defense on House Concurrent Resolutions 177, 178, 179, 180, 181, 182, 183, and 184, 86th Congress, identical resolutions declaring the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands.

The resolutions would request the President to make a study of existing national programs in the mining and minerals field with a view toward reorienting them to offset a critical depression of the domestic mining and mineral industries.

The subject matter of these resolutions falls primarily within the responsibilities of the Department of Interior; and the Department of Defense, accordingly, defers to the views of that Department on these resolutions.

The Bureau of the Budget has advised that it has no objection to the submission of this report to the Congress.

Sincerely yours,

ROBERT DECHERT.

EXECUTIVE OFFICE OF THE PRESIDENT,
OFFICE OF CIVIL AND DEFENSE MOBILIZATION,
OFFICE OF THE DIRECTOR,
Washington, D.C., July 17, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for a report on House Concurrent Resolution 177, House Concurrent Resolution 178, House Concurrent Resolution 179, House Concurrent Resolution 180, House Concurrent Resolution 181, House Concurrent Resolution 182, House Concurrent Resolution 183, and House Concurrent Resolution 184, 86th Congress.

From the standpoint of mobilization planning, there is no need for a special review of programs related to the mining and mineral industries, because these industries are examined from time to time in the regular course of our planning.

There is also no need for additional legislation or a reorganization plan to assure a ready supply of materials for defense in a national emergency. Under existing statutes and Executive orders, this agency and others charged with mobilization responsibilities have the authority for actions that might be needed toward sustaining that part of domestic production that is required in case of an emergency.

From the standpoint of mobilization readiness, therefore, these resolutions are not necessary.

The Bureau of the Budget has no objection to the submission of this report.

Sincerely,

LEO A. HOEGH.

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., July 17, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives.

DEAR MR. ASPINALL: This is in response to your request for a report on House Concurrent Resolution 177, declaring the sense of Congress on the depressed domestic mining and mineral industries affecting public and other lands.

As we understand the resolution, it is concerned with the assistance which might be given to "critically depressed domestic mining and mineral industries" through a revision of existing programs of the Government toward that end. The only domestic mining or mineral industry upon which the programs of this Commission are believed to have a significant impact is the uranium industry. As you know, virtually all of the uranium mined in the United States is destined for ultimate sale to the Commission. Moreover, from its inception the industry has developed under the aegis and close surveillance of the Commission. We know of no basis for considering this industry critically depressed.

The Commission's uranium program has endeavored to give careful consideration to the development of a sound and stable domestic uranium industry, the orderly development of uranium resources on Federal, State, and privately owned lands and the efficient use of this critical resource. Our long-range planning has sought to avoid, and we believe has avoided the problems associated with abrupt market fluctuations. While critical defense needs in the earlier days of the program and the then relatively small size of the domestic industry necessitated procuring a major portion of our uranium requirements from foreign sources, our domestic industry now has the capability of supplying most, if not all, of our projected uranium needs. Consequently, we are looking to this industry for the bulk of our anticipated future requirements.

In view of the above, we do not feel that there is any need for the proposed resolution so far as the programs of this Commission are concerned. The above comments, of course, apply to the identical resolutions House Concurrent Resolution 178, House Concurrent Resolution 179, House Concurrent Resolution 180, House Concurrent Resolution 181, House Concurrent Resolution 182, House Concurrent Resolution 183, and House Concurrent Resolution 184, also mentioned in your letter.

The Bureau of the Budget has advised us that it has no objection to the submission of this report.

Sincerely yours,

R. E. HOLLINGSWORTH,
Acting General Manager.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., July 21, 1959.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. ASPINALL: This is in response to your request for the views of this Department on House Concurrent Resolution 177 through House Concurrent Resolution 184, identical proposals, declaring the sense of the Congress on the depressed domestic mining and mineral industries affecting public and other lands.

We make no recommendation regarding the adoption of any of these proposals. They represent proposed statements of the policy position of the legislative branch and do not have the effect of law. However, should the Congress adopt any of the proposals, we shall be happy, of course, to comply with any request the Congress may make regarding the submission of reports with respect to this Department's plans in the mineral fields, subject to the availability of funds to carry out the investigation necessary to make such reports. Therefore, although we make no recommendation regarding adoption of any of these proposals, we offer the following comments for your consideration.

A review of the proposed resolutions discloses that they would do two things: First, they would request the Presiddnt to have reviews made of existing programs of the departments and agencies of the executive branch, with a view to using these programs and existing legislation to provide for increased production of minerals and metals to aid employment in critically depressed domestic mining and metals industries. Secondly, they would attempt to enunciate as a policy (*a*) the fostering and encouragement of a sound and stable domestic mining industry, by achieving a maximum self-sufficiency in minerals and metals production; and (*b*) that existing programs providing for national stockpiles for defense needs and reliance upon imports for defense and industrial requirements will not accomplish the objectives of providing for national security and the welfare of the consuming public.

In previous appearances before your committee and the Subcommittee on Mines and Mining of the Senate, spokesmen for this Department have called attention to the fact that, in considering the mining industries of this country, each mineral commodity presents a different set of problems, i.e., any proper analysis must be done on a case-by-case basis. It has been pointed out that market conditions, both internally and worldwide, vary with each commodity. The price trend of each mineral commodity depends on availability of markets, the trend of industrial use, the cost of production and transportation, the grade of ore in the mine or area, together with a host of other factors. Such factors as increased foreign competition in certain

minerals and the influences of completion of some stockpile procurement and Defense Production Act programs do not affect all of the minerals industries. Where they have had effects on particular mineral commodities, such effects are not the same in each case.

We have, therefore, many reservations concerning the applicability of the general statements made in the several whereas clauses stated as preamble to the resolutions. Such statements deal with the mining industry as if it were one single industry, and imply that the stated causes of distress in the minerals industries apply equally to the various commodities. We believe that the areas of distress in domestic mining and minerals industries are often localized with respect to a few commodities and, in most cases, to a few geographical areas of production. We believe, further, that many Government actions and programs have had beneficial effects on large segments of the domestic mining industries and have contributed materially to our national security and general economic well-being.

Subsection (a) of the first part of the resolutions would request the President to have reviews made of existing programs of the departments and agencies of the executive branch for the purpose of using them more effectively to provide for increased production and employment in critically depressed mining and metals industries.

Generally speaking, the specific legislative enactments directly concerned with minerals and metals upon which executive agencies programs are based fall into two general catagories: (1) research programs, and (2) procurement and production expansion programs required for national security.

In the first category, certain programs of the Bureau of Mines and the Geological Survey of this Department have as their objectives lower mining costs and utilization of low-grade ores, better and cheaper methods of processing ores, development of newer and more effective instruments for locating ore bodies, utilization of new minerals and metals, new uses for minerals and metals in plentiful supply from domestic sources, development of substitutes for minerals and metals in short supply, and geological mapping of areas potentially favorable for location of mineral reserves.

In the second category are the various programs for acquisition of minerals and metals for the strategic stockpile and for the supplemental stockpile. These inventories are accumulated as a reserve to be available in a national emergency. In addition to these acquisition programs, now for the most part completed, there were activities conducted under Public Law 520 of the 79th Congress, and the Defense Production Act of 1950, as amended, which were directed to expansion of sources of domestic production and exploration for new ore bodies. While the programs for expansion of mineral production have for the most part terminated, an exploration program similar to the defense minerals exploration program was made permanent by the last Congress. This second category of programs is directly related to national security and is responsive to national defense requirements. Congressional guidelines for programs and limitations on program objectives are spelled out in the legislation.

In addition to the foregoing, there are many and varied other programs and policies of the Government which have strong influences on the economics of the mining and metal industries. Among these, to name a few, are influences exerted by the tax laws, the rates for

transportation charges set by the Interstate Commerce Commission, tariffs, foreign trade programs, and national fiscal policy. All of these activities bear indirectly in varying degrees upon the whole economic climate within which the minerals and metals industries operate.

None of this existing legislation discloses that it was the intent of the Congress to establish departmental and agency programs to aid depressed minerals industries by increasing production.

Sections 2 and 3 of the proposed resolutions deal with policy determinations by the Congress.

This Department concurs in the objectives of the policy statement set forth in section 2. In fact, the Cabinet Committee on Minerals Policy made similar recommendations to the President in its report of November 30, 1954. The present administration approved that report and has since made several legislative proposals embodying the suggested policy. In this connection, we have made complete commodity-by-commodity analyses of the minerals industries and made definite program proposals to the Congress. This Department has repeatedly stated its position in favor of the maintenance of sound domestic minerals and metals industries.

At the request of this Department, the last session of Congress passed Public Law 701, providing for a permanent Federal program for participating with industry in the continuation of aggressive domestic exploration for minerals. Additional funds have been provided by the Congress for expansion of programs of the Bureau of Mines and the Geological Survey which directly assist in promoting the health and vigor of the domestic mining and metals industries. Continuously programs and activities are being initiated and carried out which are directed to making wise and full use of our natural mineral resources on a sound basis.

With respect to section 3, dependence upon foreign sources for certain of our mineral requirements, in part or in whole, is necessary because many minerals are not found in sufficient quantity in the United States to supply our needs. This fact was one of the reasons for institution of the stockpile program. Based upon our present knowledge of reserves, total national self-sufficiency in all minerals and metals could not economically and readily be achieved except at excessive and prohibitive cost. For many mineral commodities it could be achieved in varying degrees—all directly related to cost. For still other minerals, we have such a plentiful domestic supply as to be the principal world source. Self-sufficiency in minerals is directly related to quantity and grade of ore reserves. In a competitive economy in the free enterprise system, self-sufficiency is directly related to costs of production.

We believe wholeheartedly in aggressive and continuing search for new minable domestic ore reserves and in aggressive research programs to make better use of what we have and to find substitutes for what we have not. We believe that concentration of effort in these areas will achieve the best results and will provide the greatest overall benefits to our national economic well-being.

We do not believe it is in the national interest to pursue the course of self-sufficiency beyond prudent and reasonable economic limits. This Department has stated that it is ready and willing to support

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sound Government programs for the minerals industries where the economic facts and the national interest justify them.

The context of section 3 of these proposed resolutions would imply that the Federal Government should adopt policies which would guarantee to domestic mineral producers virtually total protection against competition from foreign sources. The Department questions the wisdom of this approach to the problem of assuring a rapidly expanding economy of an adequate supply of minerals and metals. The concept that, irrespective of cost, the American economy should encourage and support maximum domestic production for all minerals and metals appears unrealistic and impracticable. This concept cannot be reconciled with the system of free enterprise, which we are endeavoring to promote and maintain. Under this system it has been our experience that healthy competition stimulates rather than retards sound economic development. It seems entirely likely that any action by the Federal Government to maintain the domestic price for any mineral at a noncompetitive and artificially high level would invite a form of competition—one that might prove more disastrous to the domestic producer in that it might lead to a permanent loss of market outlets—the development and introduction of a cheaper substitute for the particular commodity.

The use of other devices such as trade barriers to regulate the flow of imports, and thereby encourage domestic production, should be thoroughly considered before they are employed and then only in a manner consistent with our national foreign economic policy and with the national interest. In this connection, it seems to us that it is the intent of Congress that the fullest use of procedures established by Congress should be made when domestic minerals industries, as a result of trade concessions, are unduly injured by excessive imports or our national security impaired.

The Bureau of the Budget advises that it has no objection to the submission of this report to your committee.

Sincerely yours,

ROYCE A. HARDY,
Assistant Secretary of the Interior.

XIII. COMMITTEE CONCLUSIONS

The facts recited by the various witnesses in the hearings and additional information contained in this report abundantly confirm the existence of a state of emergency in important segments of the domestic metal and mineral industry and in many mining communities in the United States. The existence of satisfactory conditions in other segments does not overcome this fact.

After due consideration of other factors, including mechanization, changes in technology, interindustry competition, and the effects of monetary inflation, the committee feels that the principal cause of the depressed conditions that presently exist stems from excessive imports. Foreign mining operations have been overexpanded and much of the excess production capacity stems directly or indirectly from U.S. Government actions.

The constant threat of overproduction abroad is an effective deterrent to recovery of the domestic industries affected.

Another conclusion to be drawn from the record is that authorized administrative remedies, particularly those available under the escape clause provisions of the latest Trade Agreement Extension Act, have not been fully utilized. The plight of the lead-zinc industry is the direct result of administrative procrastination. Such actions as were taken were too little and too late.

The testimony also indicates that the wide dispersion of responsibilities for dealing with problems of the mining industry has contributed to confusion and inaction in the executive branch of the Government. The Minerals Advisory Council which was appointed by the Secretary of the Interior after World War II was disbanded. One witness testified that there has not been an advisory council called by any agency of the Government in almost 10 years.

Comments that increased prices for a limited number of mineral raw materials would be inflationary miss the point that only certain segments of the industry need help. Moreover, the help they need would be too small to produce a significant effect on our overall economy even if it were not offset by benefits, which the committee believes, would far outweigh the cost.

Specifically, the testimony before the Subcommittee on Mines and Mining and the other information available to the committee show that:

1. Mining and the extraction of minerals from Federal, State, and privately owned lands situated within the United States and its Territories and possessions are basic industries upon which the transporting, processing, and distributing industries and the consumers of the Nation depend.

2. Government programs for the establishment and maintenance of national stockpiles of strategically important metals and minerals and for the development of mine and plant capacities for the production thereof, administered through Government purchases, contracts, loans, grants, technical assistance, barter, and other means, have resulted in the abnormal and artificial stimulation of foreign metal and mineral exploration and development and the expansion of foreign capacities for the production of metals and minerals.

3. Increased foreign production of certain metals and minerals, together with downward revision of national stockpile requirements, has resulted or threatens to result in depressed domestic prices for these materials, drastic curtailment of domestic production, economic disaster to individual firms, hardship for dependent industries, extensive unemployment, and severe contraction of business in the affected communities.

4. An emergency exists since further delays in the recovery of the domestic mining and mineral industries would cause irreparable damage to mining and mineral properties, wastage of human and natural resources, and loss of productive capacity, and would have a depressing effect upon the national economy and threaten national security.

5. All governmental efforts to date have not been effective in alleviating these detrimental effects.

It is also clear that:

1. It is in the national interest to foster and encourage (*a*) the maintenance and development of a sound and stable domestic mining and

minerals industry; (*b*) the orderly discovery and development of domestic mineral resources and reserves on Federal, State, and privately owned lands; and (*c*) mining, mineral, metallurgical, and marketing research to promote the wise and efficient uses of domestic metal and mineral resources.

2. The maintenance and development of a sound and stable domestic mining and minerals industry, without critical dependence upon foreign sources, is essential to national security and the welfare of the consuming public, and that this objective is independent of and cannot be accomplished by the maintenance of national stockpiles for planned defense needs in a single emergency or the existence of productive capacity based upon the importation of foreign materials.

In sum, the committee's investigation clearly shows the need for prompt study of possible remedial measures by the executive branch and the need for adoption of House Concurrent Resolution 177.

XIV. Committee Recommendation

The Committee on Interior and Insular Affairs recommends that House Concurrent Resolution 177 be adopted.

APPENDIXES

APPENDIX A

Summaries of Individual Metal and Mineral (Except Fuels) Mining Industries

ALUMINUM AND BAUXITE

The United States is the world's largest producer of ingot aluminum, supplying approximately 45 percent of the total, but depends principally upon Jamaica and Surinam for raw material. Bauxite, the only commercial ore of aluminum, is produced domestically almost entirely (98 percent) by captive mines in Arkansas; minor quantities, mostly for nonmetallic uses, are mined in Alabama and Georgia. Domestic bauxite is inferior in grade to imported, but measured reserves would maintain current production for 40 years at current rates. Clays and various other silicates are nonconventional raw materials which may be utilized in case of prolonged emergency.

Notwithstanding tremendous expansion of the aluminum industry, during and since World War II, imports of the metal (principally from Canada, a lower cost producer) are large (over 280,000 tons per year) and exports are relatively small (80,000 tons per year).

Present large capacity (2,224,000 tons per year) is not fully utilized. Estimated 1958 consumption is 2,080,000 tons. Stocks increased alarmingly in 1956 and 1957 and output was curtailed but new potlines are now being activated and consumption is once more rising both in the United States and abroad.

Offerings of Russian metal have threatened world markets, but actual exports from the Soviet bloc have been virtually negligible as yet.

Since 1952, ingot aluminum prices have ranged from 20.2 to 28.1 cents per pound. Current quotation is 24.7 cents. Tariff duty, formerly 4 cents and presently 1¼ cents per pound, on the metal is equivalent to about 5 percent ad valorem. The bauxite duty, formerly $1 and presently 50 cents per .long ton, is equivalent to only about 3 percent ad valorem and has been suspended until July 16, 1960.

Stockpile inventories of bauxite and of ingot exceed maximum objectives. Only one primary producer can still sell ingot to the Government under the "put right" clauses of expansion goal contracts.

Industry spokesmen have indicated a view that aluminum should not be forced to suffer adverse discrimination if competitive metals (e.g., copper, lead, and zinc) qualify for Government assistance.

ANTIMONY

During World War I, U.S. production of antimony established an alltime record. However, the Yellow Pine mine of Bradley Mining

Co., Stibnite, Idaho, which produced 75 percent of the domestic mine output, suspended operations in 1952. In this mine the antimony ores were associated with tungsten and gold but reserves containing economic gold values have been mostly worked out. The antimony production of the Sunshine Mining Co., Shoshone County, Idaho, virtually the only remaining antimony producer, is a byproduct of copper-silver ores. Very small and sporadic outputs of antimony ores have been reported from Alaska and various Western States, but 50 to 70 percent of known U.S. reserves are in the Yellow Pine mine. However, many domestic mine ores contain minor quantities of antimony that eventually report as a byproduct in the smelter. In 1957, the antimony content of domestic antimony ores was 709 tons and 1,950 tons of the domestic primary smelter output, totaling 22,565 tons, originated in domestic ores.

About two-thirds of the annual smelter output (11,400 tons in 1957) is derived by nine companies from ores and concentrates imported from Mexico (50 percent), Bolivia (20 percent), Union of South Africa (20 percent), and other countries (10 percent). Imports of metal and antimony oxide, principally from Europe, accounted for somewhat less than one-half the annual new supply of primary antimony.

The consumption of primary antimony in the United States fluctuates widely, but has tended to decline in recent years. In 1957, it dropped to 12,000 short tons versus the 1949–52 average of 17,247 short tons.

Secondary antimony production, mostly recovered in alloys such as battery lead, totaled 19,200 tons in 1958 versus a general level of 22,000 to 24,000 tons in 1952–57.

Antimony imported in ores or concentrates is free of duty. Tariff rates on metal and oxide are 2 cents per pound and 1 cent per pound (gross weight), equivalent to about 6 percent and 4 percent ad valorem, respectively.

Prices of antimony metal in New York have held at 29 cents per pound in recent months but fluctuated widely in most earlier years. During World War II the average was about 15.5 cents, but during 1949 the range was from 33.78 to 40.23 and in the 12 months of 1952, quotations declined from 51.85 to 36.47 cents.

Antimony has several important strategic uses although its military importance was sharply reduced after shrapnel became obsolete. Domestic deposits are relatively small and low grade even as compared with those in Mexico, Bolivia, and the Union of South Africa. Reserves in what is now Red China are of the order of 2 or 3 million tons, far in excess of the free world total. Before the long war with Japan, China supplied nearly two-thirds of the annual world output but Chinese production in 1957 is estimated at only 16,500 tons. By reason of its huge reserves, ability to produce high purity metal and compounds, and low mining costs, China possesses a capability of regaining its dominant position in the world antimony market.

According to John Edgar's testimony to the Subcommittee on Mines and Mining on July 1, 1959, the cost of producing antimony at the Sunshine mine in 1958 was 30 cents a pound, f.o.b. Shont, Idaho. A realized price of 33 cents would be necessary to maintain a domestic industry capable of producing more than one-quarter of our domestic requirements. The quoted price on domestic antimony metal, f.o.b. Laredo, Tex., was 29 cents but this is a rather nominal quotation be-

cause foreign antimony was available at a price of 23 to 25 cents, duty paid delivery in New York. Barter contracts in the latter part of 1928 were at 22.5 cents, f.o.b. North Atlantic port.

Miss Alma Dorothy Priester undertook to dispel the Interior Department's pessimism as to our antimony reserves. Occurrences in Idaho, California, Oregon, Nevada, and Alaska show promise. If a duty of 5 cents per pound were placed on imports and the proceeds applied to a domestic industry, she believes, we could produce 30 percent of domestic requirements and maintain a stable industry available in emergency.

ASBESTOS

The captive mine of a major consumer near Eden, Vt., is the only large asbestos producer in the United States. Small quantities of amphibole asbestos are mined in California and North Carolina. The only known domestic deposits of low-iron chrysotile asbestos are in Arizona. Formerly this peculiar type of asbestos fiber was available commercially only in Northern Rhodesia and supplies were critically short during World War II. The principal use is for electrical insulation. Under Public Law 733, 84th Congress, purchases of Arizona fiber of suitable quality were consumated and there has been considerable agitation for Government financing of a mill in this area. However, large deposits of low-iron chrysotile asbestos of superior quality have been opened up in British Columbia, thereby virtually eliminating the strategic importance of the small, scattered domestic deposits.

According to the statement furnished by Frank P. Knight, 1,000 San Carlos Apache Indians were dependent upon Arizona asbestos for support. Most of them lost their jobs when the Government purchase program ended. Two new mills have been built which can recover short fiber which was formerly thrown away on the dumps, but these mills must have Government aid if they are to become established.

BARITE

Domestic consumption of barite expanded rapidly from less than 400,000 tons in 1939 to a record 2,035,389 tons in 1956.

Although supplies were critically short during World War II the shortage was due primarily to lack of labor and materials for expansion of the industry. Adequate supplies are largely a matter of plant capacity and consequently no barite has been acquired for the national stockpile. Domestic barite deposits are numerous and widely distributed. Total known commercial reserves in the United States have been estimated to exceed 40 million tons. About 75 percent of the domestic production now comes from Arkansas and Missouri, although significant quantities are mined in the Southeastern States, in Nevada, and in various other Western States.

Imports have increased even faster than domestic production, reaching a record total of 832,626 tons in 1957. Canada, the leading source for more than a decade, dropped to third place in 1957. Mexico replaced Canada in first place and Peru ranked second.

Several large domestic mines were idled in 1958 but this may be attributed to reduced demand rather than to foreign competition. Most of the ground barite used in drilling is consumed in the Louisiana

and Texas Gulf Coast areas. In 1958, however, imports of crude barite for processing at Gulf plants were reduced, notwithstanding the fact that ocean freight rates were at their lowest level in many years. Actually the foreign deposits which furnish the bulk of the imports are owned or operated by major American mining companies who are also consumers and consequently the ratio of imports to domestic production is largely determined by company policy. The present tariff duty of $2.55 per long ton, reduced from $4, is equivalent to about 15 percent of the U.S. delivered price.

BERYLLIUM

Beryl, at present the only commercial beryllium ore mineral, is mined as a coproduct of feldspar, mica, and/or other pegmatite minerals. Almost 200 mines, in about a dozen States, produced more or less beryl, chiefly as a byproduct, but domestic production is of the order of only 500 tons a year whereas industrial consumption has increased rapidly from 1,948 short tons in 1954 to 6,200 tons in 1958.

Free world production of beryl is presently estimated at 9,500 short tons a year. Most of this has been shipped to this country for industrial consumption and stockpiling. During the Korean emergency visible stocks were depleted and free world supplies scarcely sufficed for U.S. consumption. Inventories under the Stockpiling Act at present, however, exceed the present procurement priority and minimum objective and industrial stocks are fairly large.

On October 7, 1952, the GSA announced a program for purchasing beryl from small domestic producers at prices higher than those prevailing in the domestic markets. The three mica purchase depots in Spruce Pine, N.C., Custer, S. Dak., and Franklin, N.H., were authorized to accept up to 25 tons of beryl a year from individual producers. Payments are on a sliding scale up to $50 a short ton unit for commercial grade (10 percent BeO and over) which compares with the 1959 nominal quotation of $28 to $31 for commercial ore. This program was originally scheduled to terminate on June 30, 1957, or when 1,500 dry short tons of ore had been purchased but it was subsequently extended until June 30, 1962, or until 4,500 tons had been received. As of December 31, 1958, only about one-half of the latter tonnage had been acquired.

Beryl deposits may be eligible for exploration loans up to 50 percent of approved costs; formerly the DMEA allowance was 75 percent.

Beryllium is an element that commands potentially greater importance to the Military Establishment and to the AEC. Domestic resources in pegmatite deposits, which allow recovery by hand sorting, are small and there is no assurance that world supplies are adequate. It is hoped, however, that new sources can be developed. The lithium-bearing pegmatite belt in the Carolinas, for example, contains about 0.4 percent beryl and represents a potential of almost a million tons—provided it can be recovered economically.

BORON MINERALS

The United States is the world's principal source of boron minerals. The industry is situated in arid regions of California and a single

company supplies a large part of the domestic production; two companies supply the rest.

After trebling in a single decade, domestic production has declined from the record quantity of 924,496 in 1955 but the 1957 output of 597,857 tons established a new record of $40.8 million in value.

Exports have been in the range of 200,000 and 250,000 tons in recent years. Imports are sporadic and negligibly small.

CHROMITE

The United States consumes 50 percent of the world's output of chromite, but its requirements are met almost entirely by imports—about 50 percent from African countries, 25 percent from the Philippines, and the remainder from Turkey and a number of relatively small producing countries. Reserves of more or less specification material in California and Oregon are small and production from these deposits is not likely to exceed 2 percent of requirements even at prices far above a commercial market. Production from these mines was sold almost entirely in recent years to the Government at incentive prices.

Estimated reserves of off-grade and currently noncommercial ores in lode deposits of southern Montana (1 or 2 million tons Cr_2O_3) are a substantial resource which could probably be greatly expanded by further exploration. In 1957 the Geological Survey estimated measured, indicated, and inferred reserves in the continental United States, excluding Alaska, at 3.5 million tons Cr_2O_3.

The DPA contract with the American Chrome Co., the only Montana producer, called for the purchase of 900,000 tons of concentrates, minimum 38 percent Cr_2O_3, in 8 years. Owing to the low chromic oxide content and chrome-iron ratio, these concentrates are not commercially usable in their present state for either metallurgical, chemical, or refractory uses. Processes for utilizing this material have been developed but are quite costly.

Free world consumption of chromite is growing rapidly and may double the present annual rate of 2.3 million tons by 1970. Estimated requirements in that year are 5,070,000 long tons compared with indicated supplies of 3,370,000 tons. A marked shortage of supply for peacetime consumption is likely to develop in the 1960's. Reserves in Rhodesia and the Union of South Africa are amply large, but railroad and port facilities are inadequate, and preference may be given to other commodities. Accordingly, many persons believe that the problem of using domestic ores may become more important. Canada also has large low-grade reserves similar to those in the Stillwater complex in Montana. Consideration may also be given to Cuban laterites.

Chromite is on the free list of the Tariff Act of 1930. Tariff rates on chromium metal and various other products were reduced in 1957 under GATT, but imports under the dutiable classifications are relatively small.

The DPA chromite purchase program terminated in May, 1958 when the 200,000 long dry ton limit had been accepted. Stockpile objectives for each of the various grades of chromite had already been equaled or exceeded. The base price of $115 per long dry ton for standard grade 48 percent metallurgical lump under this program

compared with a maximum of $46 paid for Turkish ore of similar specifications.

J. R. Holman's brief on behalf of the California–Oregon Chrome Producers Association affirms that all domestic chromite mines except that of American Chrome Co. have been completely closed since May 1958. Deposits occur along the Pacific coast mountain ranges from Santa Barbara, Calif., to the Kenai Peninsular in Alaska plus the John Day area in southern Oregon. Except for one or two inactive plants no market exists for chrome ore in the West, so freight costs to market represent 75 percent of the Atlantic seaboard price for foreign metallurgical grade ore. Two areas could be worked today if a local market were assured. No known reserves existed in 1951 but after filling the 200,000 quota in 17 months 100,000 tons remained unmined in the San Luis Obispo area, 50,000 in Coalinga, and 100,000 in Megalia. New methods of drilling serpentine country rock and improved methods of concentration contributed to this result. American mines could recover 10 percent of the domestic market if given the proceeds of a tax of only a half cent per pound of chromium metal contained in imported ores.

Bills now pending before the committee, including H.R. 5021 by Representative Sisk, H.R. 5023 by Representative Ullman, and H.R. 5668 by Representative Porter, would provide a bonus of $35 per ton for not to exceed 5,000 tons, plus an extra $10 per ton for the first 1,000 tons to take care of small operators. In 1957, the last full year of production under the purchase program, 66 percent of the California producers and 84 percent of the Oregon producers averaged less than 100 tons. Representative Sisk stated that a $90 price, roughly that contemplated in these bills for small miners, is essential for continued domestic production. William W. Gardner, in his testimony at the recent hearings, called attention to various statements by Interior Secretary Seaton before committees of both the Senate and the House urging support for chrome miners. Appearing before the House Subcommittee on Mines and Mining a year ago (Hearings on Domestic Minerals Act of 1958, p. 56, lines 24–29), the Secretary assured Representative Ullman:

> * * * we do not propose to see the chrome industry die on the vine.

CLAYS

The domestic production of clays, as reported by the Bureau of Mines, reached a peak of 50.88 million short tons valued at $163 million in 1956 and was down to about 43 million tons in 1958. About 70 percent of the total tonnage and 20 percent or more of the value of clay produced in the United States is classed as "Miscellaneous clay" which comprises chiefly large tonnage clays and shales used in the manufacture of brick and other heavy clay products, portland cement, and lightweight aggregates. Other classifications, each representing virtually a separate mining industry, are kaolin, ball clay, fire clay, bentonite, and fuller's earth. Prices range from under $0.75 to $45 per short ton, depending upon type and quality.

Exports of all varieties of clay exceed imports by a wide margin although they represent scarcely more than 1 percent of the gross overall tonnage produced. Imports are a significant competitive factor only in the kaolin or china clay industry. China clay imports

come almost entirely from the United Kingdom. The present duty on these clays is $1.125 per short ton, equivalent to about 7 percent ad valorem.

Georgia and South Carolina account for around 90 percent of the domestic production of kaolin. Ohio, Pennsylvania, and Missouri are the leading sources of fire clay although large quantities are also produced in a great many other States. Wyoming is the major source of bentonite. The ball clay industry is largely confined to Tennessee and Kentucky and most of our fuller's earth is mined in the Southeastern States.

COBALT

The principal producer of cobalt concentrates in the United States is the Calera Mining Co. in Idaho, a subsidiary of the Howe Sound Co. Smaller amounts are produced as byproduct from domestic ore by Bethlehem Cornwall Corp. in Pennsylvania and National Lead Co. in Missouri. Domestic mine production in 1958 was about 4.8 million pounds and consumption around 7.5 million pounds.

World production increased from a 1948–52 average of 8,200 short tons to 16,000 tons in 1956 and declined moderately to 15,500 tons in 1957 and 14,000 tons in 1958. Much of this expansion was stimulated by U.S. stockpile purchases which were completed except for two purchase contracts covering 85 percent of domestic production: Calera, 6,501,000 pounds by December 31, 1959, and National Lead, 7,320,000 pounds by 1962.

Total purchases under DPA and ICA contracts were 95.9 million pounds of metal, all foreign except for the 13.8 million under these two contracts.

Inasmuch as free world productive capacity greatly exceeds current industrial consumption, domestic producers are faced with intensified competition. In the Belgian Congo, which produced as much as 10,019 tons cobalt in 1956, almost two-thirds of the world total, the cobalt is largely a byproduct of copper mining and smelting. Other important producing countries are Canada, Northern Rhodesia, and Morocco. Smaller amounts of cobalt are also recovered in smelting copper and/or nickel ores from several countries.

The U.S. Government has a contract with the Freeport Sulphur Co. that could result in the purchase of 23,835,000 pounds of cobalt to be produced in Louisiana from ores mined in Cuba.

The testimony at the recent hearings reveals that the Calera refinery, near Garfield, Utah, will close this fall and that the Idaho mine has already curtailed to cleanup operations. This means that 130 men at the refinery and 450 at the mine lose their jobs and a community of 1,500 persons at the mine becomes a ghost camp. Of the original investment of $12 million, $7 million will be lost—subject to possible income tax refunds or credit.

F. A. McGonigle stated that blocked out reserves at the Calera mine are conservatively estimated at 15 million pounds of cobalt and inferred reserves are 225 million. The peril point for this operation is $2.40 a pound. The company lost money on its Government contract at $2.30. Domestic sales had been lined up but when the price of foreign cobalt was dropped in February 1959 from $2 a pound to $1.75, the company abandoned all hope of meeting foreign competition unless there is Government action.

COLUMBIUM-TANTALUM

The domestic columbium mining industry comprises one large placer operation which is operated by Porter Bros. Corp. in Valley County, Idaho, and which supplies under Government contract 99 percent of the domestic concentrates production. Byproduct uranium, thorium, and rare earths are also recovered from this operation. The remaining 1 percent of the domestic output of columbium-tantalum ore is a sporadic byproduct of a dozen or more pegmatite mines in Arizona, Colorado, Maine, New Mexico, North Carolina, and South Dakota.

The United States is the major consumer of these two metals, accounting for 60 to 85 percent of the free world total output. Nigeria has been the principal producing country, followed by Belgian Congo and Norway. Some production is reported from other African countries, South America, Australia, and the Spanish Peninsula. World reserves of tantalum appear to be quite small. The major known supply is mixed tantalite-columbite ores of the Belgian Congo and the columbite ores of Nigeria. But columbium (largely as pyrochlore) is moderately abundant in Brazil, Africa, and Canada. Columbium occurs in titanium ores in Arkansas and elsewhere but is not economically recoverable.

The estimated world production of columbium- and tantalum-mineral concentrates rose to an alltime record of 11.5 million pounds in 1955 compared with the annual 1948–52 average of 2.8 million. This increase was largely the result of U.S. Government expanded purchases. On May 28, 1952, the Defense Materials Procurement Agency began buying domestic and foreign columbium and tantalum ores, paying an incentive bonus of 100 percent of the specified price to actual producers. Later, the GSA was authorized to continue buying foreign ores until December 31, 1956, and domestic ores until December 31, 1958, or until 15 million pounds of contained pentoxide (Cb_2O_5 plus Ta_2O_5) of both domestic and foreign origin was purchased. Public Law 733, 84th Congress, which provided for the purchase of domestically produced columbium-tantalum concentrates, expired December 31, 1958. The Government contract with Porter Bros. Corp., for delivery of 1,050,000 pounds of oxides has a time limit of June 1961.

All stockpile objectives have been filled.

Imports of ores and concentrates of these materials are duty free. At the peak of the purchase program in 1955, they rose to 5,760 short tons, later dropping to 2,088 tons in1957 and about 2,000 tons in 1958. Tantalum-mineral concentrates are imported principally from Belgian Congo and Brazil with several other countries contributing minor amounts. Ordinarily, at least 50 percent of the imports of high-columbium concentrates are from Nigeria.

Prices of typical mixed columbium-tantalum concentrates dropped sharply from $3.40 to $1.35 per pound of contained pentoxide content in 1955. The current quotation is $1.05 to $1.10.

The OME participation in approved exploration projects is 50 percent, formerly 75 percent.

The statement from Robert P. Porter points out that although a guaranteed price of $2.35 per pound of combined contained columbium-tantalum oxides in domestically produced concentrates would be a fair

figure for a 65-percent grade, any such limitations as are proposed in some pending proposals would not do much good. It takes about $12,000 a year to keep one man employed in an efficient mining operation. If a mining company can sell no more than 20,000 pounds a year at the stated price, its gross sales could not exceed $47,000 and only four men could be employed. Porter Bros. Corp. along with the chemical company that performs the necessary chemical separations have over $4 million invested in plant and facilities. The mine operations alone employ 80 men with an excess of 350 dependents. He says that in order to provide proper incentive for the miner and investor to go out and make this country self-sufficient in these vital minerals:

> We feel that a proper share of the total columbium-tantalum market for domestic operations should be provided for at not less than 1 million pounds of oxides per year and that any one producer should be able to furnish 300,000 pounds per year. Porter Bros. Corp. could produce 400,000 pounds plus of columbium-tantalum oxides per year and the above limitation would reduce our production by 25 percent. Also, it takes 300,000 pounds to operate a chemical reduction plant efficiently.

COPPER

In contrast with the severe slump in late 1957, the current copper outlook is encouraging; however, the world's economic condition must improve even further before consumption catches up with productive capacity.

After rising to peak levels during World War II, U.S. copper production fluctuated within rather narrow limits before reaching a new peak of 1,106,215 tons in 1956, only slightly higher than the previous record of 1,090,818 tons in 1943. Of the total U.S. output in 1957, Arizona supplied 47 percent, Utah 22 percent; the remaining 31 percent was mined mostly in Montana, Nevada, New Mexico, and Michigan, with smaller tonnages in a half dozen other States.

Historically, the United States used to be a major exporter of copper but domestic consumption has exceeded production from domestic mines in every year since 1939. Whereas the domestic mining has remained almost stationary, production in foreign countries has expanded greatly and further substantial additions to world capacity are still being made. Free world consumption outside of the United States continued to increase substantially to an alltime high, estimated at 2,066,141 tons in 1957, and continued at close-to-record levels in 1958 with some further gains in 1959.

Since world production had increased faster than consumption, producers' stocks of refined copper and metal in process began to increase in 1956 and soon reached unwieldy proportions. After midyear 1958, gradual improvement in consumption, combined with a drastic reduction in imports and some cutbacks in production, caused inventories to decline to normal; however, as operations are stepped up at domestic mines and production in other countries increases, supplies once more threaten to top demand by a fairly wide margin.

After a 7-year suspension, the excise tax on copper was reimposed on July 1, 1958. The effective rate was reduced to 1.7 cents per pound as a result of the GATT meetings in 1956 and it remains in effect when

the price of copper is 24 cents a pound or more. Should the price drop below 24 cents, it would increase to 2 cents.

Reimposition of the excise tax, in effect a tariff on imports, coincided with the improvement in U.S. consumption and doubtless contributed to the net outflow of unmanufactured copper during the latter part of the year. It does not follow, however, that this was the major cause of the improvement in the domestic mining picture.

The price of electrolytic copper f.o.b. refinery, as reported by the Engineering and Mining Journal, rose above 46 cents per pound in March 1956, but dropped below 36 cents by November of that year and reached a low point of 25 cents in January 1958. After reimposition of the 1.7-cent excise tax, the price rose to 26.5 cents in July and to 29 cents in October where it held until early 1959 when it progressively advanced to 31.5 cents.

Whereas copper mine wages have increased along with wages in other industries, labor productivity has also increased. The quantity of crude ore mined per man-hour in 1957 was 49 percent above the 1947–49 average and notwithstanding the reduction in working hours, the output per worker increased 38.1 percent. In terms of recoverable metal, however, the apparent improvement in efficiency was much less because the average grade of ore mined was lowered.

A peril point of 24 cents per pound of copper was established in April 1951, but production costs, as reported by Arizona producers, have subsequently increased by 36.1 percent. Clyde Weed, Anaconda Copper Co. board chairman, recently stated that African copper is produced at a cost of between 18 and 20 cents per pound and the large mines in Chile can recover copper at a cost somewhat less than that of Rhodesian copper. Because of molybdenum and gold credit, the lowest cost U.S. mine (presumably Kennecott's Utah Copper property), he said, mines copper at about 15 to 16 cents per pound. However, the top third of our domestic production requires a copper price of 28 cents to operate profitably for any period of time.

Whereas the recent marked improvement in the statistical position of copper favors a complacent attitude, plant expansion in several foreign countries may lead to renewed overproduction. The following figures submitted by A. B. Parsons to the Senate subcommittee in its hearings on March 26, 1958, may deserve further consideration. Dr. Parsons is a mining engineer who is widely known for his economic studies of the copper industry.

Free world copper position, 1961

[Thousands of tons of newly mined metal]

	U.S. domestic	Foreign
Expectable demand	1,300	1,900
Equipped capacity at indicated cost:		
Below 19 cents	260	1,950
Between 17 and 25 cents	584	825
Above 25 cents	450	128
Total	1,294	2,903
Deficit (−) or excess (+) capacity over demand	−6	+1,003

As pointed out in the statement from C. L. Willis which is included in the record of the subcommittee hearings, many persons believe that the recent 31.5-cent price for copper is too low. Such a copper authority as Arthur Notman believes it should average 35 to 37 cents. However, the president of the Anaconda Co. suggested that with copper at 35 cents it would be a good idea to dispose of surplus copper stocks and thus stabilize the price at this figure. To get this price, Mr. Willis believes, the present tariff would have to be raised from 1.7 to 4 cents per pound. On an ad valorem basis, this would be only 11.5 percent compared with 40 percent during the first 8 years that the 4-cent tax was in effect.

FELDSPAR

Domestic production and consumption of crude feldspar and feldspar flotation concentrates increased almost steadily until 1956 when domestic sales totaled 693,270 long tons valued at $6 million. In 1957–58, decreased demand from the glass and pottery industries decreased annual demand to around 600,000 tons. Imports from Canada, currently dutiable at 12.5 cents per long ton of crude and 7½ percent ad valorem on ground feldspar, used to be fairly important but have been very small in recent years. Exports are negligible.

North Carolina is the principal producing State, California next. New England States produce about 10 percent of the U.S. output; the remainder is almost equally divided between the Southeastern States (Georgia, North Carolina, Virginia) and Western States (Arizona, California, Colorado, South Dakota).

Average value of crude feldspar output, about $9.30 in 1958, is a composite of unit values of various grades ranging up to $25 to $30 a long ton.

Nepheline syenite, aplite, talc, pyrophyllite, and even blast furnace slag are direct or partial substitutes for feldspar. Imports of ground nepheline syenite from Canada, 169,989 short tons valued at $2.5 million in 1957, are a competitive factor. Mica, beryl and several other pegmatite minerals are byproducts of feldspar mining that are minor economic factors in the feldspar industry.

FLUORSPAR

Production of finished fluorspar from domestic mines has always been able to meet domestic requirement when the price was high enough. During World War II, consumption more than doubled. Whereas formerly the bulk of the demand originated in the steel industry, a variety of other uses developed after 1941 and domestic consumption rose from a peacetime maximum of less than 200,000 tons a year to 520,197 tons in 1952, and 644,688 tons in 1957. By 1960 it is expected to reach 700,000 tons.

Domestic production reached an alltime peak of 413,781 tons in 1944 but subsequently declined irregularly and since 1952 has fluctuated in the range of from 245,600 tons (1953) to 329,719 tons (1956).

Most of this decline in production has been in the output of metallurgical grade fluorspar. Production of ceramic-grade fluorspar (93 to 94 per cent CaF_2) has declined to a smaller extent whereas that of acid-grade fluorspar reached an alltime high of 225,261 tons in 1957.

Government purchases for stockpiling, and subsequently under Public Law 733, helped to expand domestic production of acid-grade fluorspar and nine of the independent flotation mills operated under this latter program were forced to close when the law expired on December 31, 1958. Captive mines, operated by aluminum and chemical companies to supply material for their own use are another factor in the growth of the acid grade fluorspar industry.

Whereas the duty on metallurgical grade fluorspar is substantially higher than that on acid grade, domestic miners were at a disadvantage in competition with foreign suppliers in delivered costs at important American markets and to some extent because of quality specifications. Inventories of this grade of spar acquired under the Stockpiling Act are still short of the procurement priority level. Beginning in 1957 domestic producers were given preference on substantial purchases and the Government has absorbed the freight charges As a result of these actions, domestic production of metallurgical grade fluorspar revived somewhat in 1958.

Between 1950 and 1958 trade journal quotations of acid-grade fluorspar ranged from $40 to $60 per short ton and of metallurgical grade from $35 to $43. Tariff duties on acid grade (plus 97 percent CaF_2) and metallurgical grade fluorspar are currently equivalent to $1.875 and $7.50 per short ton corresponding to approximately 3.9 percent and 24 percent respectively, of the United States price on January 1, 1959, less duty.

The postwar expansion in production of fluorspar outside of the United States has been almost worldwide. Imports into the United States formerly came principally from overseas but Mexican production was stepped up during World War II and recently accounted for 60 percent of the total foreign fluorspar consumed in this country. At present, by far the bulk of our metallurgical fluorspar is mined in Mexico. Substantial tonnages, almost entirely of acid grade, are also imported from Italy, Spain, and until recently, Canada; smaller tonnages come from several other countries. Imports from Canada dropped sharply in 1957 as the St. Lawrence Fluorspar Corp. of Newfoundland, Ltd., suspended mining following expiration of its U.S. Government contract early in the year.

Mexico is the dominant factor in the current fluorspar situation in the United States. Although not much deep mining has been done in Mexico, surface showings are widespread and estimated reserves are huge.

Before World War II, fluorspar production in the United States was largely confined to a relatively small area on both sides of the Ohio River in Illinois and Kentucky. Illinois is still the largest producing State, and while Kentucky's production has become relatively less important, this area is credited with the major portion of the known domestic reserves. Operations at many mines, however, are seriously handicapped by heavy flows of water and costs tend to be high. Increasing demand for acid-grade fluorspar which is acceptable in the form of flotation concentrates and which command higher prices than metallurgical grade has encouraged production in several Western States, especially in Colorado and New Mexico and more recently in Montana. Western mines, however, are handicapped by

transportation costs to major markets and cannot compete with Mexican fluorspar, most of which moves at least part way by barge.

Increasing amounts of fluorine are recovered as a byproduct of the treatment of phosphate rock and imports of natural cryolite (which is mined only in Greenland) have continued but these sources are relatively unimportant factors in the competitive situation.

Appearing on behalf of the Independent Domestic Fluorspar Producers Association, Clyde L. Flynn, Jr., confirmed a recent Department of the Interior estimate that 1959 domestic production of acid spar would not exceed 100,000 tons of which 75 percent would be captive and that metallurgical production in the United States would be less than 40,000 tons, whereas domestic production has dropped 50 percent since the termination of Government buying, domestic consumption is expected to exceed the all-time record of 645,000 tons in 1957. The increased requirements will be supplied largely by foreign producers. A Mexican producer pays wages of $1 to $1.29 a day compared with a wage scale of $1.84 to $2.09 per hour in an Illinois mine. Canadian producers, whose wage rates are only 10 to 15 percent below ours, have applied for a $10 per ton tariff.

Most of the capital for the tremendous expansion of foreign production was provided directly or indirectly by the U.S. Government through grants, loans, stockpile contracts, and barter deals.

A minimum annual domestic rate of production of 200,000 tons of acid grade, 40,000 tons of ceramic grade, and 125,000 tons of metallurgical grade fluorspar is essential, Mr. Flynn contends, to provide a base of operations commensurate with the best national interest. To achieve these output levels, prices of $55, $48, and $34.50 to $39.50 per ton for the respective grades would be necessary. Unless limitations are placed on imports, domestic production will cease.

Extracts from the Senate committee report, urging enactment of S. 1285, as amended, are reproduced in the subcommittee hearings.

GOLD AND SILVER

Owing to their wide use in coinage, the production of the precious metals involves special economic features that differ in many important respects from those of other mining industries. Throughout the world the straight gold-mining industry has been squeezed between rising labor and supply costs and a fixed price of $35 per fine troy ounce for its product. The price of gold was boosted from $20.67 to $35 per ounce by Presidential proclamation on January 31, 1934. Silver prices have fluctuated rather widely in the past but since 1933 the domestic output of newly mined silver has been bought by the U.S. Treasury at prices which have usually been higher than the open market price. On July 31, 1946, Congress established the seignorage deduction at 30 percent, thus increasing the Treasury price to $0.90505 per fine troy ounce. The coinage or statutory price is $1.29.

Whereas gold mines in some countries have been aided by subsidies, tax concessions, currency devaluation, and/or sales of their product at premium prices on the "free market," domestic miners have been held down to a price which brought prosperity to the industry through the 1930's but which does not reflect inflationary trends of later years. Another factor was the wartime closing of domestic mines by the

War Production Board Order L–208 and other official restrictions denying gold and silver mines equipment, supplies, and even manpower. The order was lifted July 1, 1945, but after 2½ years of unproductivity many of the mines were never reopened and others suffered financial losses that were never recouped.

The production of gold from U.S. mines in 1957 reached the lowest peacetime level in more than 60 years and subsequently, due to the cutback in base metal production, declined further. Only 1,736,352 ounces were produced in this country in 1958. South African production, on the other hand, increased to an alltime high of 17,656,447 ounces, up nearly 4 percent over the preceding year. Several factors have contributed to the prosperity of the industry in the Union of South Africa which currently yields 60 percent of the free world output of the yellow metal. Among these factors may be mentioned the opening of new mines in the Orange Free State, the devaluation of the pound, and credits from uranium. Gold subsidy programs remain in operation in Canada, Australia, and Colombia and are under consideration in Ghana.

South Dakota continues to rank as the leading gold-producing State by a wide margin, followed by Utah, Alaska, and California. About 75 percent of the total U.S. output comes from these four States, the remainder from a dozen or more smaller producing States, mostly in the West. Next to the Homestake mine, which accounts for most of the Idaho output, the second largest producer of gold is the Utah Copper mine. The two companies owning these mines supply about one-half of the total domestic gold production. In 1957, 38 percent of this total was a byproduct of base-metal ores, 43 percent was recovered from precious metal ores and 19 percent from placer mines. Of the 25 mines that supplied 87 percent of the 1957 output, 8 were lode mines, 5 were placer mines (mostly in California and Alaska), 8 were copper mines, 1 was a lead-zinc mine, and 3 were copper-lead-zinc mines.

Idaho is also the leading silver-producing State. Utah and Montana vie for second place followed usually by Arizona. Almost two-thirds of the output of domestic silver comes from the three principal districts: Coeur d'Alene region in Idaho; Summit Valley (Butte) district in Montana; and West Mountain (Bingham) district in Utah, in the order named. Of the 25 leading domestic silver-producing mines in 1957, only 4 depended chiefly on the value of silver in their ores. The Comstock lode and other deposits famous for their rich silver contents, were depleted many years ago. Not only in the United States but throughout the world, the production of silver is largely dependent today upon the mining of copper, lead, and/or zinc with which it is commonly associated. Since the overall revenue per ton of ore largely determines the economic potential of a given deposit, a fair price and a good market for silver encourages the production of the associated metals and vice versa.

The alltime high in annual world production of silver was approximately 278 million ounces in 1937 and for the United States alone the peak was nearly 75 million in 1915. In 1946, world output had slumped to less than 140 million ounces of which the United States contributed about 30 million. World production has subsequently increased fairly steadily to 204.7 million ounces in 1958 while domestic

production has remained almost stationary between 35 and 40 million ounces per year.

Mexico has been the principal silver-producing country for more than two centuries but since 1930 its output has greatly declined, actually as well as relatively. The United States still ranks second followed by Canada and Peru but production has increased rapidly in other countries, especially in Europe, Asia, and Africa.

Industrial consumption of silver in the United States accounts for nearly one-half of the world's total production. Most of the imports in recent years have comprised returns against lend-lease obligations but most of the mine production from the Western Hemisphere is also exported to this country. Whereas the spread between the free market and the Treasury price in June 1947 was over 30 cents an ounce, the differential has recently almost disappeared. Continued expansion in industrial requirements has led to predictions that prices will go up above the Treasury price of 90.5 cents. U.S. Treasury stocks have been reduced to 202 million ounces. Withdrawals have recently been at a rate of 80 million ounces annually, about evenly divided between coinage and sales to industry whereas U.S. mine production averages only about 35 million and free world consumption for all purposes apparently exceeds current production by as much as 25 percent.

However, since silver as well as gold is tied in with currency problems, predictions based on estimated mine production versus apparent demand may be greatly modified by political actions in several countries or by release of privately hoarded stocks.

Most mining men urge a free market to permit private individuals to purchase and hold newly mined gold. Merrill E. Shoup, in his testimony before the subcommittee, advocated not only a free market but also a bonus of $70 per ounce to be paid on newly mined domestic gold. This subsidy, he estimated, would cost the Government no more than $100 million a year.

L. L. Huelsdonk pointed out that the U.S. Treasury still sells gold to industrial consumers at approximately $35 per ounce whereas the cost of producing gold has increased 300 percent since that price was established. The Bretton Woods Agreement should be altered, he thinks, to compensate for depreciation of the dollar, and means should be found to raise the price of the metal and to sterilize the resulting Government profits as a stabilization fund to provide money supply to the economy when needed through retirement of national debt. During the last 22 years, according to this testimony, the paper money supply of the free world has increased about 280 percent whereas monetary gold has increased only about 60 percent.

Barron's (July 6, 1959) quotes a Soviet economic journal statement that the cost of Russian gold runs to about 660 rubles per ounce. This is equivalent to $165 at the official rate of exchange, $66 at the tourist rate.

Actions recommended by witnesses on silver were limited to a request that the U.S. Treasury should stop selling the metal—at least not at almost the same price it pays for domestic silver. Now that demand for industrial use as well as for monetary purposes has increased, the Treasury sales place a ceiling on world prices. Moreover, the present policy results in rapid depletion of the stocks of "free" silver. When these are gone, the Treasury will have to buy in the open market at much higher prices in order to meet its coinage needs.

In 1958, world production of silver was 204.7 million ounces and world consumption totaled 250.5 million ounces. The U.S. output in that year was 33 million ounces and it used 121.2 million ounces, 85 million in arts and industry and 36.2 million for coinage.

Higher prices for gold and silver would afford some benefit to base metal miners—especially copper, lead, and/or zinc producers in the Rocky Mountain States. However, the major effects would be in the fields of banking and currency and of foreign relations.

GRAPHITE

Certain qualities of natural graphite, normally produced only in Ceylon and Madagascar, are strategically important and are not readily duplicated from domestic deposits, even at high cost. Inventories of all strategic grades acquired under the Stockpiling Act substantially equal or exceed present interim basic and maximum objectives and all special Government programs aimed at stimulating domestic production have been terminated.

One mine in Texas which produces crystalline flake graphite and another in Rhode Island which yields amorphous graphite, comprise the present domestic graphite mining industry. Wartime operations in Alabama and in Pennsylvania have been abandoned.

GYPSUM

Gypsum mining has become one of the leading industrial mineral-producing industries. Domestic production and imports reached all-time records in 1956 of 10.3 million and 4.3 million tons, respectively. The domestic output, mainly from captive mines, was nominally valued at $34 million in that year.

Roughly, two-thirds of the domestic output is mined in the five leading producing States—California, Iowa, Michigan, New York, and Texas. Imports are largely influenced by transportation considerations and are derived mostly from captive mines of the large American manufacturers of gypsum products. They consist principally of Canadian material shipped into New England and Atlantic Coast States in company-owned vessels. Smaller, though not unimportant, tonnages are imported from Mexico for use in California and Washington. Crude gypsum is on the free list of the Tariff Act of 1930.

IRON ORE

Forecasts of probable sources of iron ore supplies for the U.S. iron and steel industry indicate that domestic production will remain virtually stationary around 100 million long tons a year and that the rapidly growing additional requirements will be supplied by imports. The principal foreign supplier will be eastern Canada which has recently developed huge reserves which have become more accessible to American furnaces as a result of the St. Lawrence Seaway. The Lake Superior region, which includes the vast iron ranges in Minnesota, Wisconsin, and northern Michigan should continue to supply around 80 million long tons a year. Although production of the Mesabi and certain other easily mined direct shipping ores continues to decline, owing to progressive depletion of its high grade deposits, production

of concentrates and agglomerate from taconite deposits in Minnesota and from jaspilite deposits in Michigan is increasing. The Southeastern States, principally Alabama, produced 6 percent of the total domestic output of usable iron ore in 1947 and the Northeastern States—New York, Pennsylvania, and New Jersey—5 percent. The most important producing area in the Western States is southern Utah but the aggregate production from Wyoming, California, Nevada, Colorado, Missouri, New Mexico, Texas, Washington, Montana, Arkansas, and Kentucky is substantial. Local changes in production in several of these minor producing States are likely to occur but the total output from all domestic districts outside the Lake Superior region is expected to remain around 20 million long tons a year.

KYANITE

Two firms, one in Virginia and one in South Carolina, comprise the kyanite mining industry of the United States. Production figures are confidential but employment at these mines is estimated as 65 persons.

Before, during, and for some time after World War II, Indian lump kyanite, by reason of its special physical structure, was a highly strategic material, but synthetic mullite is now available and is at least as good and possibly a superior replacement for Indian kyanite. Whereas exports of kyanite, as well as other minerals, from India have been embargoed from time to time, mullite is produced by sintering or fusing Western Hemisphere raw materials, principally domestic. Imports of kyanite from India and from certain African countries have continued but only on a much reduced scale.

LEAD AND ZINC

Since 1949, U.S. consumption of lead has remained fairly stable around 1 to 1.2 million tons a year and consumption of slab zinc and certain other zinc products has fluctuated to within similarly narrow limits around 1.1 million tons a year. Mine production during this period has declined irregularly while imports have increased greatly.

As early as May 10, 1950, the lead industry petitioned the Tariff Commission for "escape clause" from the cut in duty under the Mexican Trade Agreement. This agreement was subsequently canceled. But later, following the cuts in duties on both lead and zinc at Torquay effective June 6, 1951, the lead-zinc industry again petitioned the Tariff Commission in September of 1953. On May 21, 1954, the Commission made a unanimous finding that serious injury was resulting from excessive imports and recommended maximum permissible increases in duties. In lieu of accepting these recommendations, however, the President authorized increased stockpile purchases and later initiated barter. He also directed the Secretary of State to urge foreign exporters not to take unfair advantage of the alternative programs.

In 1957 the barter program was reevaluated by the Department of Agriculture with the result that few barter contracts were made after April 30 and GSA purchase programs were terminated in 1958. On April 24, 1958, the Tariff Commission concluded a second study of the lead-zinc industry and unanimously reaffirmed the finding that

imports were causing serious injury. It split in regard to recommendations. Three Commissioners recommended returning to the 1930 tariff rates and three recommended the higher rates of the previous decision plus quotas. The President took no action on either of these recommendations because the Seaton bill embodying the administration-favored subsidy plan was before Congress. When this bill failed to pass, the administration on September 22, 1958, announced the imposition of quotas on metal and ore. The quotas are based on 80 percent of the 5-year average imports, 1953–57, and not the 50 percent limitation recommended by three Commissioners; and the President rejected the recommendation by all Commissioners for increased duty.

As compared with the 1947–49 average of 16 cents, the New York price of lead metal dipped in August 1958 to 10.75 cents, came back to 13 cents in October (following the establishment of quotas), but dropped to 12 cents in January 1959, the current (June 1959) quotation. The price of zinc remained steady at 10 cents from July 1957 until the last quarter of 1958 when it began to stiffen even before the import controls moved the market to 11.5 cents. The latter price compares with the 1947–49 average of about 12 cents.

Although the statistical position of zinc has begun to stabilize and the lead situation shows signs of improvement, present-day prices are not remunerative for most domestic producers. Many mines are shut down while others are able to continue in operation only by unduly depleting their higher grade ore reserves and postponing normal exploration and development.

The impact of the long continued depression in the lead-zinc industry has been uneven. In the Tristate region of Kansas, Oklahoma, and Missouri, production has been virtually at a standstill since July 1957. The depressed conditions in this area have been described in the report of the special subcommittee of the House Interior and Insular Affairs Committee headed by Representative Ed Edmondson, printed in the appendix to the subcommittee hearings.

In comparison with the base years, 1947–49, the Western States which then supplies 60.5 percent of the domestic lead mine output and 57.4 percent of the zinc mine output have shown greater drops than the national totals. By contrast, production of zinc in eastern Tennessee has increased as a result of new discoveries; and several other districts have managed to avoid drastic curtailment of operations although often showing a loss on the books.

In appendix C is printed the report of the Third Session of the Lead and Zinc Committee, United Nations Conference on Lead and Zinc, issued May 6, 1959.

LITHIUM MINERALS

Lithium ore mining was a very small industry before World War II and the value of lithium ores mined in the United States did not exceed $600,000 a year until 1951. It rose to $3 million in 1954 and continued to expand rapidly thereafter. Later figures, however, cannot be released. Import statistics likewise are not available but they, too, have expanded greatly. Principal sources are Canada, Federation of Rhodesia and Nyasaland, and South-West Africa. Domestic mines are in North Carolina and South Dakota and a complex lithium phosphate is an important byproduct from the brines of Searles Lake, Calif.

The rapidly growing demand for lithium was sharply accelerated by AEC contracts to purchase lithium hydroxide from the three principal domestic producers, two of which used foreign ore. After extracting the small content of the isotope lithium-6 most of this lithium compound is available for resale for industrial uses.

In October 1958, the AEC announced that it did not presently intend to negotiate for further supplies of lithium hydroxide after deliveries were completed on existing contracts. An oversupply of lithium minerals and chemicals developed and domestic lithium mines were closed. The largest domestic mine has resumed operations but on a limited scale. Canadian and African mines still supply substantial imports, largely for use by the two refiners whose AEC contracts do not run out until December 31, 1959. A drop in imports is anticipated in 1960.

Although industrial requirements of refined lithium products continue to grow, the demand has not increased enough to absorb the AEC surplus lithium and also allow for reasonable new production. The quantity of this surplus is classified "confidential." Notwithstanding low labor costs abroad, the U.S. lithium mines hope to be able to compete with imported ores in a free market but their present plight is due to what they call "unfair competition" from a Government surplus stockpile.

MAGNESITE

Already more than one-half of the magnesia produced in the United States is derived from sea water, well brines, and bitterns, and the proportion derived from mine products (magnesite, brucite, and dolomite) continues to decrease. Before World War I, Austria supplied most of the world's magnesite with small quantities from Greece. Deposits in California then furnished only 4 percent of U.S. requirements, but when foreign supplies were cut off after 1914, they were actively exploited and a large new source was opened at Chewelah, Wash.

Between the two World Wars, about 70 percent of the refractory magnesia used in the United States was produced from domestic crude magnesite, about three-fourths from Washington and one-fourth from California mines. California deposits have been largely exhausted and no magnesite is currently being mined in that State. Northwest Magnesite Co. in Washington has continued to be the leading producer of domestic magnesite, but two companies are mining magnesite and/or brucite in Nevada. In a letter dated March 25, 1958, J. C. Stivers, secretary of the Northwest Magnesite Co., pointed out to the Senate committee that expansion of facilities for producing dead-burned magnesite both in Washington and at the company's sea water plant at Cape May N.J., was requested by the Government, which granted certificates of necessity for fast tax writeoffs. Investment in these plants totals $17 million. The letter stated that the Washington operation was shut down and that the Cape May plant was operating at only one-third of capacity.

Imports of dead-burned magnesite from Austria, hitherto the principal foreign source, were reduced in 1957, but those from Yugoslavia have recently assumed major importance and pose a substantial threat to the domestic industry. Yugoslavia is also the principal source of the small imports of caustic calcined magnesite.

It has been stated that the Yugoslav industry was largely assisted by American dollars and know-how.

From 1922 until 1951, the tariff on dead-burned magnesite was $11.50 per short ton, but this was reduced after the Torquay Conference to $7.67 per short ton. Since the average declared foreign market value of imports from Yugoslavia in 1957 was $45 a short ton, the ad valorem equivalent of the present duties is 17 percent. On the basis of the delivered cost in U.S. markets, of course, this percentage would be considerably lower.

MANGANESE

In 1957, shipments of manganese ore from domestic mines attained an alltime record of 366,000 short tons and domestic consumption rose to 2.36 million tons, also a new record. General imports in that year, totaling 3.1 million tons, were derived from 27 different countries. However, Brazil, India, Ghana (formerly the Gold Coast), Union of South Africa, and Mexico, in that order, supplied 80 percent of the total. Brazil, which alone supplied 30 percent of the 1957 imports, surpassed India which had been the principal source since 1948. All but a small fraction of the Brazilian production comes from operations financed in whole or in part by U.S. capital and a large part of the high-grade ore from the newly opened Amapa deposits is purchased by the U.S. Government. The mining company (ICOMI-Bethlehem) is reported to be exercising its option to deliver about 200,000 long tons to the U.S. national stockpile during 1959 at the exceptionally low price of 76 cents, including quality bonus per long ton unit, c.i.f. eastern U.S. seaboard. Barter transactions have also been a considerable factor in expanding imports during the last 2 or 3 years.

Short term stockpile objectives for all varieties of manganese ore, except chemical ore B, have been substantially equaled or exceeded. Industrial stocks are likewise high and trade journal quotations, which are ex-duty, have declined to 92 cents per long ton unit, c.i.f. U.S. port. The comparable price was $1.69. Imports dropped off in 1958 but stocks continued to rise.

Domestic manganese ore production since 1951 has been largely dependent upon Government purchase programs. Nevada's leading position among the manganese-ore-producing States is the result of a contract with Manganese, Inc., which produces metallurgical nodules from flotation concentrates. Arizona, where as many as 40 mines have contributed to the "carlot" program, rose to second place in 1957, supplanting Montana, which for many years had been the largest producer. These three States accounted for 75 percent of the total output in the 1957 period.

Termination of the low-grade purchase program was a serious blow to all the areas in other States where the program was in effect but particularly in each of the three locations where depots were established—Arizona, Montana, and New Mexico. Similar programs were requested by miners in Arkansas and in the Southeastern States but were not established by the Government.

It is now anticipated that the present "carlot" program will be filled on August 5, 1959, instead of continuing to the end of the established time limit in 1961. It would have ended even earlier if

production had not fallen off due in some cases to abandonment of new capital expenditures which would not be amortized in the foreseeable life of the program. Moreover, since this program is aimed at small producers, the 10,000-ton limitation of annual purchases from any single producer has restricted the investment of substantial capital in manganese mining ventures.

Representative Wilbur D. Mills, author of H.R. 1930, to encourage the discovery, development, and production of manganese-bearing ores and concentrates, introduced letters received from OCDM and the Department of the Interior affirming the Government's intention to allow the domestic manganese purchase program to terminate in August 1959. With reference to the assurance of continuance in Dr. Arthur S. Flemming's testimony before a Senate Committee on May 24, 1956, Leo A. Hoegh, Director of OCDM, has stated:

> * * * In 1956 our mobilization planning was based on a 5-year emergency whereas current policy provides only for a 3-year emergency.
>
> Dr. Flemming's testimony, to which you refer in your letter, was based on the 5-year planning policy in effect at that time. Deliveries under the program during the past 2 years were considerably higher than had been anticipated so that the 28 million ton limit will be attained some time before the extended time limit. Our inventories will then closely approximate the former 5-year maximum objective and will, of course, be well above the current 3-year maximum.

The reference to "28 million ton limit" in the above statement is, of course, technically in error. The revised quota was 28 million *long dry ton units* of 22.4 pounds of contained manganese each, equivalent to a maximum of 700,000 tons of ore, or only about 3 or 4 months of national requirements at current peacetime rates. In a letter dated July 9, 1959, to Representative Mills, Mr. Hoegh acknowledged this inadvertent error and indicated his regret at the misunderstandings that it had caused in discussions of the manganese situation.

Industry representatives, in testimony before the subcommittee, emphasized the reliance they had placed on Dr. Arthur S. Flemming's testimony before the Senate committee as spokesman for the administrative agencies and indicated that they had not recovered capital investments that had been made in furtherance of the program.

MERCURY

In 1958 the output of mercury at domestic mines rose to 38,000 flasks, 10 percent above the 1957 output and the highest figure for a peacetime year since 1883.

Excluding 10,000 flasks received through barter, general imports in 1958 were only 20,935 flasks compared with 45,449 in 1957.

In the first quarter of 1959, commercial imports declined and domestic production was less than in any quarter since the corresponding period in 1957. Industrial consumption declined, producers' stocks increased slightly, and prices were sharply reduced, averaging $220.21 for the quarter or $8.85 less than for the preceding quarter.

Consumers' and dealers' inventories, on the other hand, were the lowest since 1955.

California supplied 59 percent of the total production in the 1959 first quarter, followed in the more or less usual order by Nevada 18 percent, Alaska 12 percent, Idaho 8 percent, Oregon 3 percent, and Arizona less than 1 percent. Of the 13 important mines, 8 were in California, 2 in Idaho, and 1 each in Alaska, Nevada, and Oregon. In 1958 the total number of producing mines dropped to 101 from 120 in the preceding year; however, 97 percent of the 1958 output came from only 22 mines.

The GSA guaranteed-price purchase program for mercury, which was scheduled to expire in 1957, was extended another 12 months to December 31, 1958. Of the total of 26,891 flasks of domestic and 3,274 flasks of Mexican metal purchased under this program, 17,463 domestic and 2,508 Mexican were acquired in 1958 under the extended program. The ODM expansion goal for mercury was closed in 1957 and inventories under the Stockpiling Act substantially equal or exceed present procurement priority levels, minimum objectives, and long-term objectives.

Government grants for exploration of eligible mercury deposits through the Office of Minerals Exploration (formerly DMEA) were reduced in 1957 from 75 percent to 50 percent of the approved costs.

The 1930 tariff rate of $19 a flask (25 cents a pound) on mercury, presently unchanged, is equivalent to about 10 percent of the U.S. price. In recent years, trade journal quotations have ranged from a low of $183–$185 a flask in November 1953, to a high of $323–$325 a flask in March 1955.

World production of mercury has increased steadily for about 10 years. In 1958 it totaled 248,000 flasks, the highest since 1942.

For many years the Spanish-Italian cartel, Mercureo-Europeo, was the dominant factor in world supply. This cartel was formed in 1928 when world stocks were excessive, but it soon succeeded in boosting prices. In 1931 prices had risen to a point where the U.S. mining industry, which virtually collapsed after World War I, could be revitalized. After supplying its own requirements and a small export trade for several years, the United States again became a net importer and has continued to be dependent more or less upon foreign metal except briefly during World War II. Originally, the cartel controlled 80 percent of world output, sales being allocated 55 percent to Spain and 45 percent to Italy, but it was disbanded on January 1, 1950, after the United States made a large purchase of Italian mercury with counterpart funds.

Italy has recently become the world's largest producer with Spain in second place. Together, they furnished only 46 percent of the total output in 1958, the United States ranking third, followed by Mexico, Yugoslavia, and Japan, in the order named. Smaller amounts of mercury are supplied by several other countries.

In the 1930's it was commonly supposed that reserves of mercury in domestic deposits were virtually exhausted but as a result of new discoveries and higher prices they are currently estimated as being sufficient to maintain production at recent annual rates for at least two or three decades. Spain is generally credited with having the largest reserves of high grade ores, but indicated and inferred reserves in several other countries are also large. Most mercury deposits in

the United States are rather small and highly irregular and consequently tend to be costly to mine. It has been estimated that few of them could be worked profitably under present-day conditions at prices below about $200 a flask.

Sam H. Williston reported to the subcommittee that the Tariff Commission study in November of 1958 showed that the domestic mercury output was produced at a loss. The average cost of $237 a flask was higher than the average sales price. The Government-guaranteed floor plan which lasted 4½ years was "indirectly" the cause of increased production. Much of the increase came from inexperienced persons and consequently at least $5 million in exploration and capital expenditures was not recovered. Actually, the U.S. industry owes its existence to the decision of the Spanish and Italian Governments to keep up the price. It would cost them more to destroy the American industry than they would gain. Our own Government has bought only 27,000 flasks from domestic mines and hundreds of thousands from abroad, according to Mr. Williston.

MICA

The United States has been almost completely dependent on foreign sources for high quality sheet mica. India and, to an increasing extent, Brazil are principal sources of strategic quantities of mica by reason of their generally larger and richer deposits and relatively low labor costs. The mining and preparation of high quality muscovite block mica calls for an extraordinary amount of hand labor. Women, children, and old men do most of the work of preparing mica for market in India and even in Brazil. Living standards and wages in the mica mining areas are far below North American levels. A little progress has been made in the manufacturing of synthetic mica, but no suitable substitutes have yet been found for major electronic uses which are expanding rapidly and which are of vital military importance.

Domestic production of nonstrategic sheet mica and even of grinding mica falls short of U.S. requirements but these segments of the mica industry are in a somewhat stronger competitive position and have low priority from the standpoint of national defense.

Stockpile objectives for mica splittings (both muscovite and phlogopite) have been met and the commercial development of reconstituted mica sheet has reduced our dependence upon these products of natural mica. Acquisition of the stockpile objectives of highly critical varieties of muscovite block and film, however, has progressed slowly because only meager quantities have been available over and above the free world's industrial requirements.

Under the domestic mica purchasing program, the Government has established depots in North Carolina, New Hampshire, and South Dakota. The prices paid for domestic mica at these three depots range from three to five times the prices of imported mica of equivalent grade (size) and quality.

Notwithstanding heavy subsidies, the domestic mica industry has been unable to equal the annual production rate in the 1920's and 1930's for sheet mica. In 1948–52 imports in this category averaged about three times the annual rates before World War II, but since 1953 the volume has tended to decline although values have tended

to rise partly because of higher unit prices and partly because of a disproportionate increase in the quantities of the more expensive grades and qualities.

Under the Tariff Act of 1930 manufactured block or sheet mica valued above 16 cents per pound was dutiable at a composite rate of 4 cents per pound plus 25 percent ad valorem. Subsequently, the ad valorem factor was eliminated so the present duty is only 4 cents per pound. Because the average value of imports under this category has risen to substantially more than $2 per pound, the present specific duty is equivalent to an ad valorem rate of 1 to 2 percent.

Government participation in approved mica exploration projects eligible for DMEA loans was reduced in 1957 from 75 percent to 50 percent.

The purchase program administered by GSA began in June 1952 and is scheduled to expire June 30, 1962, or when total purchases under the program are equivalent to 25,000 tons of hand-cobbed mica. This quota will probably be reached in 1960. Unless it is extended miners will soon be forced to abandon orderly mining and salvage what they can get in a hurry, allowing the workings to cave.

According to the statement of Louis Aldridge, president of the Domestic Mica Miners Association, there are approximately 6,000 highly trained people employed in the mining and processing of domestic mica. When the purchase program stops, not a single sheet mica mine can stay in profitable operation in the United States. Very little sheet mica is produced as a byproduct of feldspar mining and so, if the mica mines close, even the nucleus of a domestic sheet mica industry will cease to exist. Doubts have been expressed as to whether India can be counted upon as a dependable source of supply in an emergency.

MOLYBDENUM

For many years, the United States has produced 90 percent or more of the free world output of molybdenum. Most of the remainder comes from Chile but there is a small and growing output in Canada and some production in Norway and other countries. Domestic production is predominantly from a single large molybdenum mine at Climax, Colo. (65 percent) and as a copper mine byproduct in Arizona, Nevada, New Mexico, and Utah. Molybdenum is also recovered increasingly as a coproduct with tungsten in California. Domestic reserves are estimated to contain about 4 billion pounds of recoverable metal or 68 percent of the free world total reserves.

In 1958, foreign production remained at about the same level as in the previous year but the U.S. share of the world total dropped to 86 percent. Production in Chile increased sharply from 3.1 to 4.0 million pounds and U.S. output dropped from 60.7 to 40.6 million pounds.

The duty on molybdenum content of imported ores and concentrates in the Tariff Acts of 1922 and 1930 was 35 cents per pound but this was reduced under GATT to 30 cents, equivalent to about 32 percent of the U.S. price. Since 1953, the price of molybdenite concentrates has tended to move gradually upward from about $1 per pound of contained molybdenum, f.o.b. Climax, Colo. On November 1, 1958, it was raised from $1.18 to $1.25.

Stockpiling objectives for molybdenum have been filled. After granting accelerated tax amortization certificates totaling $2.9 million, the expansion program for molybdenum was closed on August 1, 1955.

NICKEL

Until recently the United States produced less than 1 percent of its requirements of nickel. Even today, the only substantial domestic nickel mining enterprise is the Hanna operation near Riddle, Oreg. In 1947, this operation yielded 20,564 tons of ferronickel, averaging 44 percent nickel. A little nickel is recovered from the treatment of complex ores in Missouri and a few hundred tons a year are recovered by American copper refineries, but U.S. industrial requirements, which have generally exceeded 100,000 short tons a year since 1950, are largely imported.

Imports in recent years have been further augmented by heavy Government purchases for the national stockpile, but inventories acquired under the Stockpiling Act now equal or exceed the present procurement priority level. Total imports in 1953–57 were obtained from Canada, 79 percent; Cuba, 12 percent; Norway, 8 percent; other sources, 1 percent.

Nickel is one of the first metals placed on a restricted-use basis during World War II and even more severe restrictions were needed to check the upsurge in the use of nickel during the Korean emergency. Although domestic shortages held back the development of new uses and stimulated substitution, nickel did not become plentiful again until 1958. Meanwhile, free world production capacity increased to about 256,000 tons a year, almost double that existing before the Korean conflict, and is scheduled to rise to 325,000 tons in 1961. In 1957 the free world consumption was about 208,000 tons and in 1958 it dropped to around 165,000 tons. The principal cause of this decrease was the business recession in the United States and Canada, but the long-continued shortage of nickel production capacity appears now to have been replaced by a possible surplus. U.S. Government-purchase contracts, advance loans, and other financial aids were major factors in speeding up the expansion in the production capacity in Canada as well as in Cuba where the U.S. Government-owned plant at Nicaro, which was rehabilitated in 1952, completed a 75 percent expansion program in 1957.

The tariff duty on nickel at present is 1.25 cents per pound. The New York price has remained at 75 cents a pound following an increase in 1956 from 65.5 cents.

PHOSPHATE ROCK

Domestic production of phosphate rock in 1958 was slightly higher than in 1957, totaling around 15 million long tons of which almost 11 million came from Florida, about 2.5 million from Western States, and the remainder from Tennessee.

Imports are negligible and about one-fifth of the domestic output is exported. Consumption has recently set new records almost every year and prices have held practically steady at around $6.20 a ton. Improved technology and large scale operation have helped to combat cost increases and to improve recovery of salable products.

PLATINUM GROUP METALS

The United States has recently consumed about 70 percent of the world output of all six platinum group metals, more than 80 percent of the production outside the U.S.S.R. Production from American mines is almost negligible and has declined almost steadily since World War II.

Domestic production of platinum and other metals of this group has recently ranged from 14,500 to 35,000 troy ounces a year. About 75 percent of this small present-day output comes from a single placer mine in the Goodnews Bay district of southwestern Alaska; the remainder is a byproduct recovered in the refining of gold and copper derived from domestic ores. Additional quantities of platinum group metals are recovered at U.S. refineries treating material derived from foreign ores and there is also some production of secondary metals in this country, but by far the bulk of domestic requirements must be imported in the form of refined metals.

U.S. imports (duty free) averaged 394,561 ounces annual in 1948–52, rose to more than 1 million ounces a year in 1955–56, and declined to 687,000 and 652,100 ounces, respectively, in 1957–58. Canada and Europe (includes African metals refined in England) are major suppliers of refined metals. Imports of unrefined material come principally from Colombia.

Inventories of platinum and iridium in the stockpile substantially equal or exceed present procurement priority levels, minimum objectives, and long-term objectives and those of palladium ore are sufficient to make additional market purchases unnecessary. Several of the platinum group metals, however, are still eligible for barter transactions.

POTASH

The United States, formerly almost wholly dependent on Europe for potash, began to furnish a large fraction of its growing requirements in the early 1930's and recently became self-sufficient. In some years exports exceed imports. The threat of a flood of imports from East Germany still exists, however. and development of a completely new and huge source is underway in Saskatchewan, Canada.

Domestic production is centered around Carlsbad, N. Mex., and high transportation costs to major markets in the Southeastern States and the Great Lakes region are major handicaps. The total U.S. consumption rose last year to an alltime peak of 2.15 million short tons of K_2O equivalent. Production from domestic mines was 2.19 million tons and exports (0.25 million tons) exceeded imports (0.22 million tons) by a small margin.

Various potash compounds are dutiable but fertilizer grade. which accounts for most of the consumption, is imported without duty.

American companies are participating actively in Canadian developments and Canadian, French, and West German interests also have leased mining properties in this region which is already credited with 6 billion tons of high grade (25 percent K_2O or over) reserves.

Carlsbad is expected to continue to be an important potash producer. New mine and mill equipment has been installed to cut costs and prices back to 1942 levels.

SALT

Notwithstanding its historical, economic, and social reputation as one of the most common and widely distributed mineral materials, domestic production in 1957 declined slightly from the 1956 peak of 24.2 million short tons but the value rose to a new high of $147.4 million. Michigan is the leading producing State followed in order by Texas, New York, Louisiana, Ohio, and California. These six States accounted for 89 percent of the 1957 output, the remainder coming from nine other States, Hawaii, and Puerto Rico. Owing to the rapid increase in demand for the manufacture of soda ash and chlorine, which accounted for 71 percent of the domestic consumption in 1957, the larger part of the salt output of the United States is sold or used in brine. The average value of the salt content of brine is only around $3.50 a short ton whereas the average value of dry salt has risen since 1952 from $7.28 to well over $10. American salt is exported to many different countries but our exports are often exceeded greatly by imports which are derived principally from Canada and from the Caribbean area. Current tariff duties have been drastically reduced from the rates in the 1930 Tariff Act and represent at present only about 3 percent ad valorem.

SAND AND GRAVEL

The domestic sand and gravel industry markets a larger tonnage than any other mineral industry, 630 million tons in 1957, and ranks among the top seven or eight in value of products ($597 million in 1957). Although more than half the output is in 10 States, there is some production in every State, Puerto Rico, and Guam.

Government and contractor operations represent one-fourth of the U.S. output but since much of such material is more or less unprocessed, the average value of commercial production is higher ($1.06 versus $0.63 in 1957).

A little European sand is imported for glassmaking but foreign trade in other classes of sand and gravel is limited to minor border operations.

STONE

Production of various kinds of crushed stone and dimension stone constitutes a large segment of the mineral industries. Excluding slate, which is classed as a separate industry, the value of the 1957 domestic output was $823.7 million. Imports (which rose to a peak of $8.5 million in 1957) and exports ($6 million) seldom exceed 1 percent of the output from U.S. operations. Imports consist chiefly of marbles from various European countries; monumental granite from Finland, Sweden, and Canada; travertine from Italy; and onyx marble from Mexico. Whereas some varieties of stone, such as Indiana limestone, command a wide distribution, most of the production is used locally.

SULFUR

Production of sulfur in the United States declined in 1958 to 6,260,000 long tons from 7 million in 1957. Nearly 75 percent of the total was Frasch (hot water mined) sulfur from Texas and Louisiana. The remainder comprised 630,000 tons of byproduct sulfur from petroleum

refining (sour oils and gases), 400,000 tons from pyrite, and 520,000 tons from other sources.

The United States is the world's largest exporter of sulfur, and exports have been well maintained around 1.6 million annually for several years. Imports, formerly insignificant, began to be important in 1955. Mexican production of Frasch sulfur expanded rapidly to about 1,250,000 tons in 1958 and Canadian production of petroleum byproduct sulfur has risen to perhaps 160,000 tons a year. Competition from these new sources has developed in domestic as well as foreign markets for U.S. sulfur. Recovery of byproduct sulfur is expanding rapidly in several oversea countries.

Imports of sulfur into the United States are duty free.

Prices of domestic mine sulfur were frozen during the Korean conflict within the range of $21 to $27 per long ton, f.o.b. mine, although sales abroad were reported up to $200 or more per long ton. After controls were abolished in March 1953, prices of U.S. Frasch sulfur rose slightly but after averaging $26.50 for several years, dropped in 1957 to $23.50 per long ton, f.o.b. mines. This quotation is for "bright" sulfur; "dark" sulfur is quoted at $1 per ton less.

Inasmuch as producers' stocks at Frasch mines are generally large, sulfur is not included in the national stockpile. Somewhat unexpectedly, a shortage developed in 1950, after the invasion of South Korea, and sulfur was put under Control Order M–99 by the National Production Authority on June 2, 1951. To assist and encourage expansion of the industry during this period, the Government allowed rapid tax amortization, purchase contracts, and other incentives, but special Government-support programs are not a significant factor in the sulfur industry at present.

TIN

The domestic tin mining industry is now inactive. In the past, sporadic operations have been reported in Alaska, California, Colorado, New Mexico, North Carolina, and North Dakota. Known reserves in these States comprise relatively low-grade material that cannot be mined economically at prices prevailing in recent years.

The U.S. Government smelter in Texas was sold to a private company in 1957 and has since been operated on only a small scale. During World War II, however, it produced as much as 43,468 long tons of tin in a single year from concentrates imported largely from Bolivia, plus more or less from Indonesia, Thailand, and the Belgian Congo.

The tin requirements of the United States exceed those of any other country. Since 1950, its consumption of primary tin has fluctuated between 45,323 long tons in 1952 and 60,470 tons in 1956. Import sources (1953–57) have been Malaya, 64 percent; Netherlands, 15 percent; Belgian Congo, 11 percent; United Kingdom, 9 percent; others 1 percent. Consumption of secondary tin, domestically produced, ranges from 24,000 to 33,095 long tons a year.

Early in 1951, primary tin sold in New York for over $1.80 a pound, but the annual average price since 1952 has hovered around 95 cents. The current quotation (June 1959) is nominally $1.0475.

The predominant factor in the world tin situation is the International Tin Agreement which undertakes to regulate supply and demand and to maintain prices with rather narrow limits. Buffer

stocks of tin are accumulated or released and support controls have been established to regulate production in accordance with quantities allocated to member countries.

The U.S. Government minimum and long-term stockpile objectives have been completed. Tin smelting under Government sponsorship was terminated by the sale of the Long Horn, Texas smelter. In October 1957, the Alaskan property of the U.S. Tin Corp. was offered for sale to satisfy a judgment in favor of the United States of America. When no acceptable bid was submitted, the Government took possession of the property.

Government participation in OME (formerly DMEA) contracts was reduced from 90 percent to 50 percent in October 1957.

TITANIUM MINERALS

Ilmenite and rutile are the only titanium minerals of commercial importance.

Domestic production of ilmenite fell off sharply in 1958 from the 1957 peak of 757,180 short tons valued at $17.4 million. Industrial consumption reached a maximum of 1,027,645 tons in 1956. Over half the U.S. production is from one mine in New York, three Florida operators furnish over a quarter, and most of the remainder is mined in Virginia. Imports (including titanium slag from Canada) have ranged recently from 300,000 to 460,000 tons per year, over 99 percent from India and Canada. Exports from India are rigidly controlled by Indian Government because monazite occurs in the same deposits.

Rutile consumption dropped from a peak of 53,393 tons in 1957 to 20,000 tons in 1958, owing to the virtual collapse of the titanium metal industry. Domestic production, about three-fourths as a by-product of Florida ilmenite mining, has never exceeded 11,997 tons produced in 1956. Australia is the predominant world source but significant new developments are reported in Africa.

Both ilmenite and rutile are free of duty. Prices, f.o.b. U.S. Atlantic seaboard, have recently been quoted at $23 to $26 per long ton for ilmenite and slightly under 5 cents per pound for rutile. In 1955, rutile prices soared to as high as 15 cents per pound.

TUNGSTEN

Only two domestic mines are known to be producing tungsten ore at present and in both of these the tungsten is a byproduct, accompanying molybdenum. Purchases authorized under Public Law 733, 84th Congress, were suspended in December 1956 for lack of funds and the authority expired December 31, 1958.

Stimulated by historically high prices, production from U.S. mines increased each year from 2,896,000 pounds of contained tungsten in 1949 to a peak of 15,833,000 pounds in 1955 and dropped only slightly in 1956. The estimated total world production during this same period increased from 31,445,000 pounds to 77,520,000 pounds in 1955 and nearly as much in 1956. This large increase, both domestic and foreign, went mostly to U.S. Government stockpiles and was paid for at above market prices. Domestic consumption, which averaged 8,090,000 pounds a year in 1948–52, dropped to 4,037,000 in 1954,

advanced to 9,061,000 in 1956, and dropped to around 5,200,000 pounds in 1958.

In 1956 tungsten was mined in 12 States and Alaska, but 94 percent of the total output came from Nevada, California, North Carolina, Montana, and Colorado, in that order. Nevada alone furnished over 35 percent and California furnished almost 28 percent. Imports in that year were derived from 23 countries. South American countries—Bolivia, Argentina, Brazil, Peru, and Chile—furnished 45 percent of the total. Next to Bolivia, Korea was the largest single source. Australia, Canada, Portugal, Mexico, and Belgian Congo were the only additional countries shipping more than 1 million pounds of tungsten to the United States in 1956.

In 1952, the average price (per STU/WO_3, c.i.f. U.S. ports, duty paid) was $63.10, only slightly below the ceiling price of $65 which was in effect through April of that year. In 1955–56 the average had fallen to $40–$40.50 and in 1958 it was estimated at only $17.15. Throughout the period of the Government domestic purchase program under Public Law 733, 84th Congress, payment was at $55 per unit.

Effective December 11, 1950, the tariff duty on imported ores and concentrates was restored to 50 cents per pound of contained tungsten or approximately $7.93 per STU/$WO_3$. A short ton unit of WO_3 contains 15.86 pounds of tungsten.

Since Government purchases accounted for by far the bulk of domestic production for many years, it has been demonstrated that the $55 price actively stimulated exploration and development of domestic mines to the point where they were producing more tungsten than our peacetime industrial economy requires. Already measured, indicated, and inferred reserves in this country are more than ample to permit maintaining our self-sufficiency for at least 10 or 15 years without additional exploration.

It has also been demonstrated by the virtual collapse of the domestic mining industry in 1958 that known domestic deposits are incapable of being mined economically for tungsten as the main product unless prices substantially exceed the present level of below $20 per short ton unit, duty paid. Some mines can probably operate at a $25 price, but $35 is probably a more realistic minimum figure for maintaining a suitable domestic production base.

R. G. Sullivan reported to the subcommittee:

> * * * if our Government would stop all forms of subsidies to our competitors, production and prices would eventually come into balance. If this were to happen, I have no doubt that market quotations would rise gradually in the range of $25 to $35 per unit. At those levels a minimum of three or four additional domestic producers would activate their operations. If prices tended to balance near the $32 to $35 level, probably an additional 10 or 12 producers would resume activity.

Ralph L. Johnson's proposal before the subcommittee is aimed at keeping open the small mines and encouraging the location of new mineral potentials by means of a guaranteed price of $50 a short ton unit up to 1,000 units a year.

URANIUM

The uranium mining industry is virtually a creation of the U.S. Government purchase program described in AEC Circulars 2, 5, and 6. Stockpiling is under AEC auspices but the OME program may provide loans at 50 percent of approved exploration costs on eligible properties.

Uranium ore production in the United States totaled about 5.2 million dry short tons in 1958 as compared with 3.7 million in 1957. Concentrate production at the yearend was at an annual rate of 15,000 tons of U_3O_8 and in 1959 the output is expected to rise to 18,000 tons having a value of more than $300 million.

On April 2, 1958, the AEC modified its previous announcement that it would suspend contracting for delivery prior to 1962 of concentrates which would involve additional milling capacity. The new policy provided an ore market in certain areas where no market or inadequate markets previously existed. Current policies indicate maintaining the 1959 level of production through 1966. Many producers have a guaranteed market through that year and others are assured of disposing of their ores to AEC at least through 1963. An AEC announcement, dated May 8, 1958, authorized private sales of uranium materials to licensed domestic or authorized foreign buyers. Such additional sales to purchasers other than the AEC may result in some expansion of the domestic output above the 1959 level.

The five leading producing States—New Mexico, Utah, Colorado, Wyoming, and Arizona, in the order named—mined 95 percent of the domestic ore produced in 1958. The remaining 5 percent was divided among the Rocky Mountain and Pacific Coast States. New Mexico and Utah each produced about 25 percent of the total.

Canada is the predominant foreign producer, its U_3O_8 output being only slightly less than that of the United States. Union of South Africa is the next ranking source, producing about one-half as much as the United States. France, Madagascar, Australia, Belgian Congo, and four or five other countries are smaller sources.

R. W. Beamer, Wyoming Mining Association, and others expressed hope that AEC contracts for foreign production should not be extended beyond the original expiration dates. Since domestic production is ample for domestic requirements, he felt that post-contract options for the purchase of foreign uranium should not be exercised.

VANADIUM

At present the production of vanadium in the United States is a byproduct of uranium ores. Although formerly a net importer, this country has become a large exporter of vanadium. Domestic production from uranium mills and from certain other byproduct sources could be expanded severalfold, provided the increased output could be marketed at prices little if any higher than those which have prevailed over the last several years. In 1958, there were three companies producing vanadium pentoxide in the United States from four major plants. This country is now the largest producer as well as the largest consumer of vanadium.

APPENDIX B

Mineral-Fuel Industries

The total production of energy from mineral fuels and water power has attained new alltime highs in almost every year since 1939. The rise in energy production is attributable to increased production of oil and gas. The portion contributed by water power has remained in a narrow range from 3.4 and 4.6 percent of the total. And the output of solid fuels has declined relatively and, since World War II, actually. Dieselization of the railroads alone reduced annual demand for domestic coal by 150 million tons and the displacement of solid fuels by oil and gas has progressed at an accelerated pace following competition of transcontinental pipelines.

Whereas much of the business lost by the bituminous coal and anthracite mining companies has been taken over by the domestic oil and gas industry, all producers of mineral fuels in the United States have suffered recently from imports of foreign oil, mostly residual oil, along the eastern seaboard. Every 4 or 5 years there has been an oversupply of oil but never in greater volume than in 1958. The oil industry's production plans must be made 5 to 10 years in advance with the result that curtailed consumption or the unexpected discovery and development of a great new field will glut the market until consumption catches up with increased supplies.

Nowhere else in the free world can a surplus of oil be suddenly absorbed more readily than along the Atlantic seaboard of the United States where many large industrial plants and utilities are equipped with dual burning equipment. Such plants can easily switch from coal to oil and vice versa.

Whereas the coal industry normally exports many times as much coal as is imported, it is vulnerable to foreign competition in the form of imports of liquid fuels which may be cheaper temporarily during periods of overproduction and depressed prices.

Normally, about 80 percent of the time, coal is the cheapest fuel over wide areas. The price of coal f.o.b. mines is approximately the same today as it was in 1948. Coal is the most dependable fuel in an emergency. Our known natural reserves of most ranks of commercial coal are vastly in excess of foreseeable requirements for many hundreds of years. The United States has one-third of the geologically estimated coal and lignite reserves of the world. In an emergency, production can be expanded and the railroads have demonstrated their ability to meet additional transportation requirements promptly when needed.

Inasmuch as known reserves of oil and more especially of natural gas are much more limited than those of coal, the coal industry contends that competitive fuels should be conserved for uses for which they are peculiarly adapted. Gas is an ideal household fuel but it does not make sense, according to coal miners, to dump it under large industrial boilers in competition with coal merely to give a pipeline company a 100-percent load factor.

The railroads have a large stake in the coal industry with a $300 million investment in cars, locomotives, and fixed plant used almost exclusively for coal traffic. It has been estimated that the movement of coal affords 30 percent of all freight revenues. On some roads this runs 70 percent.

Atomic-energy developments are subsidized by the Government but the coal required to produce a pound of uranium would afford more useful heat energy if it were burned directly under a boiler. Coal-generated power costs as little as 4 mills per kilowatt-hour at the mines. Since power from atomic fission currently costs around 60 mills it is not likely to be commercially competitive with coal on a cost basis in the near future.

Total future energy requirements of the United States are variously estimated but are likely to increase twofold or threefold in the next four decades. In 1952 the Paley Commission forecasted an increase in electric power production alone of about 6 percent a year for the next 25 years and the Commission believed that this increase will have to be met largely by coal. Aggressive research and sales campaigns are likely to expand other markets for solid fuels. In an effort to recapture the household heating market the coal industry is emphasizing the convenience of space heating by electricity employing any of several techniques including resistance heating, radiant heating, and heat pump methods. If successful this development would speed up the expansion of electric power industry and provide still larger markets for coal.

Both within and without the coal industry there is a demand for a Government-sponsored study to provide a forum where representatives of gas, oil, atomic, and coal interests may be heard. The need for a sound national fuels policy is receiving wide attention. Its major purpose would be to study the properly balanced use of these fuels, foreign and domestic, from a broad public point of view.

Specific suggestions for advancing the interests of the coal industry, as outlined by Joseph E. Moody in his statement before the Subcommittee on Mines and Mining on July 2, 1959, may be summarized as follows:

1. Support of the State Department and the Department of Commerce is needed to advance the interests of American coal in foreign countries.
2. Passage of a Coal Research Act would afford a means for opening many new avenues and markets.
3. Careful review of tax policies on mineral resources would show how companies in the industry could be permitted to accumulate the tax moneys for modernization and replacement of facilities and mines.
4. Dumping tactics in the case of gas and residual oil should be prevented.
5. If transcontinental pipelines were in fact before the law common carriers in the same manner as the railroads some of the more severe dumping tactics would be alleviated.
6. The production of electric power by nuclear fission should be on a straight competitive basis. The use of tax money paid by one industry should not be used by the Government to subsidize a competitive industry.

ANTHRACITE

The mining of anthracite is concentrated within an area of less than 500 square miles in eastern Pennsylvania. Anthracite, or semi-anthracite, occurs in Virginia, Arkansas, Colorado, and New Mexico but operations on these deposits, mostly small, are generally classified as belonging to the bituminous industry.

Anthracite is currently mined from three principal sources—deep mines, strip pits, and culm banks. In addition, a few hundred thousand tons a year of "river coal" is recovered by dredging culm bank material that was washed into streams. Since production from underground mines is more expensive, other sources have become more and more important. In 1958 only 50 percent of the total output was underground coal; strip coal constituted 32 percent, bank production 14 percent, and dredge coal 3 percent.

As a result of decreased demand in domestic, Canadian, and oversea markets, the production of Pennsylvania anthracite dropped to 21.2 million net tons in 1958. The 1959 rate promises to be even lower. In 1919 the output reached a peak of 100 million tons. Active competition from liquid fuels, especially from heating oils, began in the 1920's and from natural gas in the 1930's. By 1938 the anthracite output had fallen to 46 million tons. Under the impetus of World War II, output increased to 64 million tons in 1944 but the downtrend was resumed later at an accelerated pace.

The peak of anthracite employment was 180,000 workers in 1914 and during the 1920's it ranged from 159,000 to 165,000. By 1939 it was down to 89,000 and the estimate for March 1959 was 16,000. Due to much more difficult natural conditions, the producitivity of labor is much lower in the anthracite industry than in other branches of coal mining but the number of tons produced per man per day has risen from 2.21 in 1930 and 3.02 in 1940 to 4.36 in 1958. If productivity were no greater today than it was immediately before World War II, the 1958 output would have required 45 percent more workers. Hourly wages at present are roughly three times as high as those paid in 1939 while average sales realization per ton was $9.31 in 1958 compared with about $4 in the late 1930's.

Frank W. Earnest, Jr., president of the Anthracite Institute, Wilkes-Barre, Pa., testified before the Subcommittee on Mines and Mining on July 2, 1959, that the peril point for anthracite prices has already been passed. The industry as a whole is operating at a loss. A long list of mining companies have already gone out of business and more will follow unless competition from other fuels is relieved. The main impact of imports of foreign residual oil along the eastern seaboard has fallen on the anthracite industry. Natural gas has made further inroads on the domestic fuel market and with the return to normal conditions in France and Italy, which have been major export markets, American anthracite is unable to compete with Russian anthracite.

Sales of anthracite fines to the steel industry have increased, especially for pelletizing and sintering iron ore fines, and as an admix with bituminous coal for making coke. Improvements in gasification have developed potentialities in the field of chemical and fuel synthesis. These and other technologic developments may keep anthracite consumption and production from dropping below current levels provided the "dumping" of surplus foreign residual oil in eastern markets can be stopped. Stockpiling by the Government might give the industry a temporary shot in the arm but would not solve the fundamental problem. A tariff on oil imports might help but it would have to be high.

Even if the decline in anthracite production is halted, continued declines in employment may be anticipated. Strenuous efforts have been made to attract new industries into the anthracite region but

most of the new jobs created so far are for female workers. Older miners must either move out of the region or face the prospect of remaining idle and on relief. Known reserves of anthracite are sufficient to maintain recent production rates for 180 to 200 years or more. But some of these will be lost irrevocably if the mines stay closed.

BITUMINOUS COAL

The production of bituminous coal and lignite is by far the largest branch of the domestic mining industry but its persistent and rapid growth was interrupted in the 1920's. Subsequent trends are obscured by wide fluctuations. The previous all-time record annual output attained in 1944 was exceeded in 1947 when the production rose to a new peak of 630.6 million net tons valued at $2,623 million. Since that year, however, the annual output headed irregularly downward to a low point of 391.7 million tons valued at $1,770 million in 1954. After recovering to 500.9 million tons valued at $2,412 million in 1956, the tonnage declined slightly in 1957 and fell sharply to only 405 million in 1958. Early in 1959 the output was running 6 percent ahead of the corresponding months of the preceding year but the total is not expected to equal that of 1957.

In 1957 bituminous coal and lignite were mined in 25 States and Alaska and in 333 counties. Historically, Pennsylvania has been the leading producing State by a wide margin but since before World War II West Virginia has taken the lead, producing 32 percent of the 1957 total whereas Pennsylvania produced only 17 percent. Kentucky accounted for 15 percent and was followed in order by Illinois, 10 percent; Ohio, 7 percent; and Virginia, 6 percent.

Domestic consumption of coal by electric utilities has increased rapidly and almost steadily, notwithstanding the great improvement in fuel economy. Only 29.1 percent as much coal was required to produce a unit of electric energy in 1957 as was needed in 1919. The railroads used to vie with retail sales as the leading outlet for American coal but dieselization has reduced railroad requirements to rather small proportions. Retail sales, largely for domestic heating, have fallen off at an increasingly rapid rate since World War II. The total consumption for industrial purposes has remained fairly constant for many years. Expansion in the iron- and steel-making capacity has boosted the demand for coke almost enough to offset the decline in sales to miscellaneous manufacturing industries whose greatly expanded energy needs are technologically capable of being supplied by oil or gas quite as readily as by solid fuel.

Exports have become a substantial factor in recent years reaching an an alltime record of 76.3 million tons in 1957, of which 58 million tons was shipped to oversea destinations and 18 million tons to Canada. In 1958 the total dropped to 53.3 million.

The bituminous coal and lignite industry has become highly mechanized in recent years. No other industry has matched its remarkable improvement in labor efficiency. Modern machines and changes in mining methods have doubled productivity within only two decades and the number of employees has been correspondingly reduced. Output per man per day is about twice as great in strip mining as in underground mining and even greater still in auger mining; however, about three-fourths of the output is still mined underground.

In 1939 the industry average output per man per day was 5.25 tons, in 1957 it had risen to 10.59, and in 1958 to 11.32. Hourly wages increased from $0.886 to $3.02 and about $3.05 respectively. Average sales realization per ton increased from $1.84 in 1939 to $5.08 in 1957 and about the same in 1958.

APPENDIX C

Report of the Third Session, Lead and Zinc Committee, United Nations Conference on Lead and Zinc

Introduction

1. The Lead and Zinc Committee held its third session at the United Nations Headquarters from April 28 to May 6, 1959. Representatives were present from Australia, Belgium, Belgian Congo, Canada, France, Federal Republic of Germany, India, Italy, Japan, Mexico, Morocco, Peru, Poland, Spain, Sweden, Union of South Africa, Union of Soviet Socialist Republics, United Kingdom, United States, and Yugoslavia.

2. The Committee elected Mr. G. J. MacMahon (United Kingdom) as Chairman and Mr. F. Berckemeyer (Peru) as Vice Chairman and then adopted the following agenda:

(a) Review of current position in lead and zinc.

(b) Methods of dealing with any difficulties arising in international trade in lead and zinc.

(c) Improvement of the collection and comparability of statistics.

(d) Future work of the Committee.

(e) Preparation of report on the work of the session.

Review of current situation in lead and zinc

3. The Committee reviewed the situation as it had developed since its second session in November 1958 and also the outlook for 1959. To clarify the current situation and the short-term outlook the Committee established a Working Party, under the Chairmanship of Mr. J. C. McCaskill (United States), to examine the statistical position.

4. The Working Party examined the statistics for 1957 and 1958 and indicated that the excess of production of lead metal by primary smelters over consumption was of the order of 195,000 metric tons in 1957 and 240,000 tons in 1958 and that the excess of production of slab zinc over consumption was of the order of 350,000 metric tons in 1957 and 205,000 tons in 1958. For various reasons, including additions to government stockpiles, these estimates could not be taken as a measure of the rate of growth of commercial stocks. Nevertheless, by the end of 1958 heavy commercial stocks of lead and zinc had been accumulated predominantly in the United States.

5. The Committee noted that the surplus was derived from a comparison of production and consumption of metal. Some delegations expressed the view, however, that there was at present an unsatisfactory geographical distribution of available ores and concentrates

with the result that, while there was excess supply in some areas, there was a tendency to deficiency in other areas. They indicated that regard should be had to the relationships between supply and demand in different areas.

6. With regard to 1959 the Working Party estimated that, before any intended reductions were taken into account, the excess of production over consumption of lead metal might be of the order of 150,000 metric tons and that of slab zinc of the order of 120,000 tons. These estimates reflected the position on the best information available to the Committee.

Methods of dealing with current difficulties

7. The Committee agreed that further reductions in commercial production and exports were needed to improve the relationship between supply and demand. During the course of the session, reports were received of specific curtailments to be made during the remainder of 1959 in various countries.

8. In the case of lead, the effect of these curtailments is summarized below:

LEAD.—*Production of refined metal*

[Thousand metric tons]

	1957	1958	1959	
			Original estimates	Revised
Australia [1]	243	253	243	220
Canada	131	122	122	[2] 115
France	86	85	84	82
Mexico	211	200	200	190
Peru	69	64	64	57
Spain	62	68	68	65

[1] Including production of lead bullion.
[2] Reductions announced immediately prior to the session but not taken into account in the estimates given in par. 6.

The Union of South Africa announced that sales of lead metal during the remainder of 1959 were to be reduced by 3,500 metric tons. The Soviet Union announced that they would reduce exports of lead metal in 1959 by 10 to 15 per cent compared with 1958. As a result of these curtailments, the estimated supply of lead metal during the second half of 1959 will be reduced by some 45,500 metric tons.

9. The Committee noted that substantial curtailments were being made or had been made in the available supplies of concentrates as a result of reductions in mine production or concentrate exports by Australia (3,000 tons in the second half of 1959) and Mexico (21,000 tons a year from the 1957 rate by the end of 1959) and by Canada (9,000 tons below the 1958 level); the Federal Republic of Germany (15,000 tons below 1957), Peru (15,000 tons below 1957), the Union of South Africa (15,000 tons below 1957), and the United States of America (65,000 tons below 1957). Some of these curtailments, which are in terms of recoverable metal content, have already been reflected in the reported reductions in the supply of lead metal.

10. In the case of zinc, the effect of the curtailments is as follows:

Zinc: Production of metal

[Thousand metric tons]

	1957	1958	1959	
			Original estimates	Revised
Canada	225	229	229	[1] 214
Mexico	60	56	60	55
Peru	30	29	29	27
United States	954	746	810	[2] 795

[1] Reductions announced immediately prior to the session but not taken into account in the estimates given in par. 6.

[2] The actual production and sales in the United States will of course depend upon the decisions of the producing companies as the year proceeds. The revised figure shown for U.S. production in 1959 represents the best estimate by the U.S. delegation.

Reduction in commercial exports and sales during the remainder of 1959 were announced by: Australia, 3,500 metric tons;[1] Belgium, 4,500 metric tons[2]; Belgian Congo, 3,000 metric tons. The Soviet Union announced that it would reduce its exports by 10 to 15 percent below the 1958 level and that this would include a reduction of 4,000 to 6,000 tons in exports to countries other than the centrally planned countries. As a result of these curtailments the estimated supply of metal during the second half 1959 will be reduced by some 52,000 metric tons.

11. The Committee noted that substantial curtailments were being made or had been made in the available supplies of concentrates as a result of reductions in mine production or concentrate exports by Australia (11,000 tons in the second half of 1959) and by Canada (30,000 tons below the 1958 level), the Federal Republic of Germany (14,000 tons below 1957), Italy (7,000 tons below 1957), Mexico (37,000 tons below 1957), Peru (32,000 tons below 1957), the Union of South Africa (4,000 tons below 1957) and the United States of America (69,000 tons below 1957). Italy announced a specific reduction in exports of concentrates of 3,500 tons during 1959. Some of these curtailments, which are in terms of recoverable metal content, have already been reflected in the reported reductions in the supply of zinc metal.

12. Assuming that consumption would continue at the level projected at the beginning of the session, the excess of available new supply which had been estimated for lead metal at 150,000 tons in 1959, would decrease to an annual rate of 59,000 tons in the second half of 1959. In the case of zinc metal, the decrease, similarly calculated, would be from 120,000 tons to an annual rate of 16,000 tons.

13. Some countries, other than those named in paragraphs 8 to 11 inclusive, were not in a position to announce reductions but intend to discuss the possibility with their industries. The Committee also noted that several other countries had already made adjustments.

14. The Committee understands that the undertakings are voluntary and do not entail formal commitments. The Committee recognizes that the effect of these reductions would be likely to be frustrated

[1] Including sales of 1,400 metric tons of metal refined in the United Kingdom from Australian concentrates.

[2] Belgian production of metal was reduced in 1958 by 20,000 metric tons below the 1957 level.

if, while the reductions were in force, producers, who have not yet announced reductions in production or exports or sales, were to take advantage of the situation created in world markets by increasing their production or commercial exports or sales in 1959 substantially beyond the levels assumed in the course of the Committee's discussions, or if Governments were to make disposals from their non-commercial stocks. The Committee urges Governments and industries to avoid any courses of action which might frustrate the efforts that are being made to bring about a satisfactory balance between supply and demand.

15. The Committee hoped that the reduction in supplies which were indicated would quickly bring about more satisfactory market conditions. At the same time the great importance of increased consumption was stressed. References were also made to the possibility of consumers' stocks being increased in some important consuming countries. The Committee is of the opinion that, if the effect of these measures does not appear to be sufficient, there should be a further meeting of interested Governments. The representatives of a number of countries again expressed their concern to see the removal of the United States import quotas.

Improvement of the collection and comparability of statistics

16. The question of the statistical data required for future intergovernmental discussions on lead and zinc, and for the use of governments and industry generally, was examined by the Committee and by the Working Party mentioned in paragraph 3. The Committee considered that further action should be taken to obtain, on a continuing basis, internationally comparable statistical data on lead and zinc. Arrangements for international collaboration for this purpose would be necessary. The Committee recommends that this matter be further considered by the Study Group on Lead and Zinc when established.

17. In this connexion the Committee recommends that the Study Group in consultation with the Statistical Office of the United Nations consider the convening of a group of experts to examine the existing series of statistical data compiled by governments and other agencies on lead and zinc and to prepare suggestions on the methods of obtaining adequate comparable data.

Future work of the Committee

18. It was noted that the November 1958 Conference had assigned certain functions to this Committee pending the establishment of a study group. The Committee assumes that the Lead and Zinc Study Group will be established in the course of the next few months. Meanwhile, the Committee should remain in being and it would be competent for any interested government, which considered that the situation warranted it, to request the Secretary-General to convene a further meeting of this Committee.

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